MAINVIEW® for DB2
User Guide
Volume 1: Views

Component of
SmartDBA System Performance for DB2

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bmcsoftware

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  - — product name
  - — product version (release number)
  - — license number and password (trial or permanent)
- operating system and environment information
  - — machine type
  - — operating system type, version, and service pack or other maintenance level such as PUT or PTF
  - — system hardware configuration
  - — serial numbers
  - — related software (database, application, and communication) including type, version, and service pack or maintenance level
- sequence of events leading to the problem
- commands and options that you used
- messages received (and the time and date that you received them)
  - — product error messages
  - — messages from the operating system, such as `file system full`
  - — messages from related software

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About This Book

This book describes how to use the online functions of MAINVIEW for DB2. It can be used by the DB2 database administrator, system programmer, or performance analyst to control resource usage and performance. Before using this book, you must be familiar with the IBM DB2 program product.

The batch reporting functions are described in the *MAINVIEW for DB2 Performance Reporter User Guide*.

How This Book Is Organized

This book is organized into two volumes:

- Volume 1: Views
- Volume 2: Analyzers/Monitors/Traces

The following information is included in Volume 1:

- Overview of how to use MAINVIEW for DB2. It includes
  - An introduction describing the major functions of MAINVIEW for DB2
  - Instructions for logging on to MAINVIEW for DB2
- Overview of how to use views and wizards
- Overview of how to manage views
- Description of the views you can use to analyze DB2 performance

The following information is included in Volume 2:

- Overview of how to use the MAINVIEW for DB2 services that run in full-screen mode. It includes
  - A description of the Primary Option Menu and how to access the MVDB2 functions
  - A description of the analyzers, monitors, and traces, and how they are used
  - The MVDB2 general commands and services
- DB2 resource analyzer display services
- DB2 resource and workload monitor data collection services
- Overview of how to use the trace facility
- DB2 application trace display services

Appendixes and an index are also included. A glossary of terms is included in the *Using MAINVIEW* book.

Throughout this document, MVDB2 refers to MAINVIEW for DB2 and MVDB2/DC refers to MAINVIEW for DB2 – Data Collector. The DMR acronym for the product is used occasionally in this book and in many online panels and messages.

Conventions Used in This Book

The following syntax notation is used in this book. Do not type the special characters.

- Brackets [ ] enclose optional parameters or keywords.
- Braces { } enclose a list of parameters; one must be chosen.
- A vertical line | separates alternative options; one can be chosen.
- An underlined parameter is the default.
- AN ITEM IN CAPITAL LETTERS indicates exact characters; usage can be all uppercase or lowercase.
- Items in lowercase letters are values that you supply.

Recommended Reading

The following books are referenced in this edition:

- *DB2 Administration Guide* from IBM®
- *DB2 Command and Utility Reference* from IBM
- *DB2 Diagnosis Guide and Reference* from IBM
- *CICS/ESA Problem Determination Guide* from IBM
- *MVS/ESA Application Development Macro Reference* from IBM
- *MAINVIEW® Solutions Guide*
- *Using MAINVIEW®*
- *MAINVIEW® Quick Reference*
- *OS/390 and z/OS Installer Guide*
- *MAINVIEW® Installation Requirements Guide*
- *MAINVIEW® Common Customization Guide*
- *MAINVIEW® Alternate Access Implementation and User Guide*
- *MAINVIEW® Alarm Manager User Guide*
- *Implementing Security for MAINVIEW® Products*
- *MAINVIEW® Administration Guide*
- *MAINVIEW® for DB2® Release Notes*
- *MAINVIEW® for DB2® and RxD2™ Getting Started*
- *MAINVIEW® for DB2® User Guide Volume 1: Views*
- *MAINVIEW® for DB2® User Guide Volume 2: Analyzers/Monitors/Traces*
- *MAINVIEW® for DB2® Performance Reporter User Guide*
- *RxD2™ User Guide*
- *MAINVIEW® for DB2® Customization Guide*
- *MAINVIEW® Products General Information*
- *Performance Activity Products Administrator Guide*
- *Performance Products Customization Guide*
- *Administrative Products for DB2® Customization Guide*

Related Reading

This book is included as part of the MAINVIEW library, which documents all your MAINVIEW products and the tasks associated with using these products.

Several books from the DB2 Performance products and DB2 Administration products libraries are also included to help you install the selectable components of MAINVIEW for DB2. These components are also used by other DB2 Performance products provided by BMC Software.

MAINVIEW Library

The MAINVIEW library documents these products:

- CMF® MONITOR (CMF)
- IMSPlex System Manager™ (IPSM)
- MAINVIEW® Alarm Manager (MVALARM)
- MAINVIEW® AutoOPERATOR™ (MVAO)
- MAINVIEW® Explorer
- MAINVIEW® FOCAL POINT™
- MAINVIEW® for CICS (MVCICS)
- MAINVIEW® for DB2® (MVDB2)
- MAINVIEW® for DBCTL (MVDBC)
- MAINVIEW® for IMS (MVIMS)
- MAINVIEW® for IP (MVIP)
- MAINVIEW® for MQSeries (MVMQS)
- MAINVIEW® for OS/390 (MVMVS)
- MAINVIEW® for UNIX System Services (MVUSS)
- MAINVIEW® for VTAM (MVVTAM)
- MAINVIEW® for WebSphere Application Server
- MAINVIEW® VistaPoint™ (MVVP)

The MAINVIEW library is organized into these categories:

- Installer documentation
- Administrator documentation
- User documentation

Each book within these categories contains information about specific types of tasks. The following figure shows how this book relates to the other books in the MAINVIEW library.

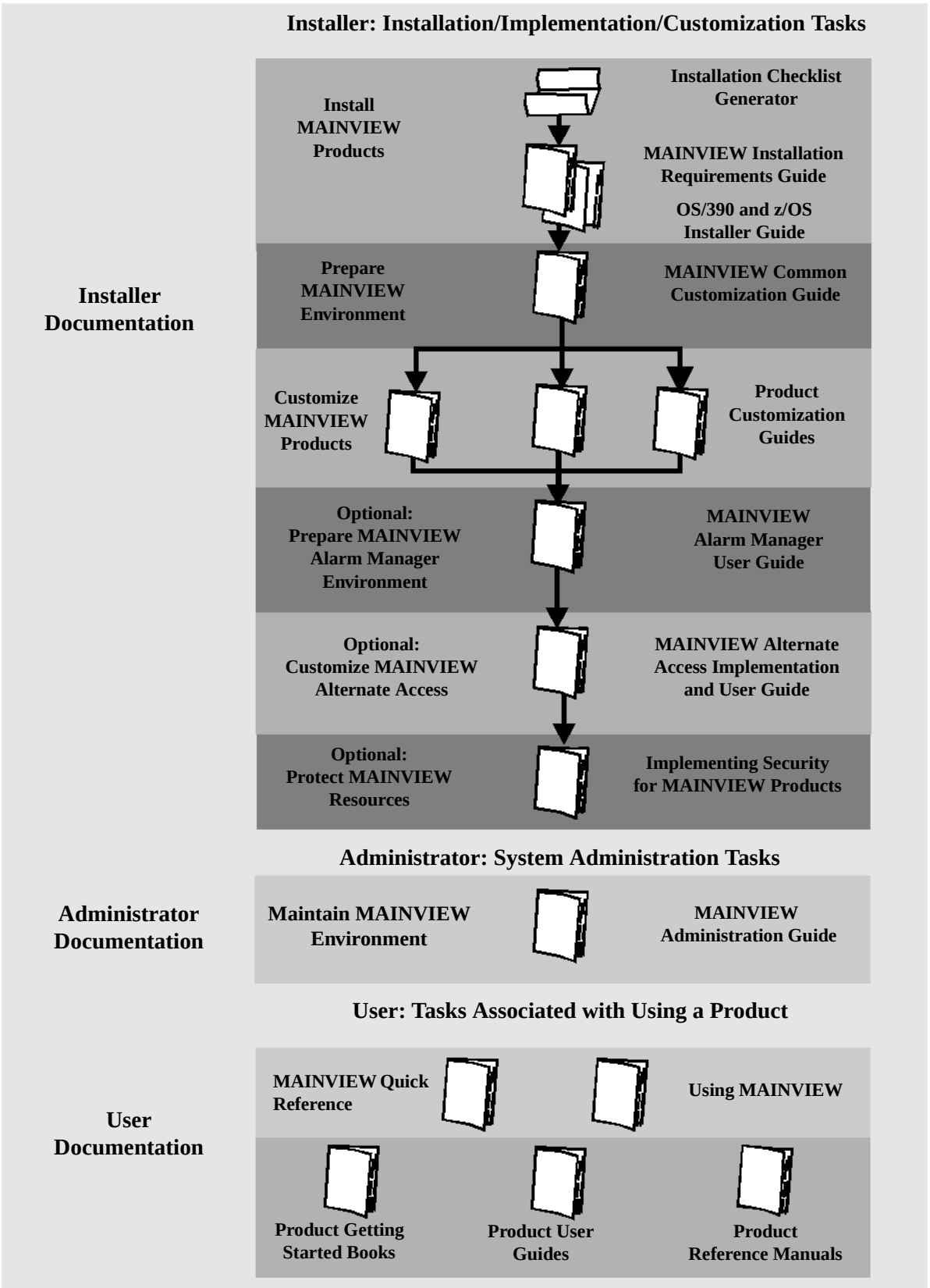

Figure 1. Organization of MAINVIEW Documentation

The following books in the MAINVIEW library are used with all MAINVIEW products:

- *MAINVIEW Quick Reference* gives a brief overview to help you quickly get started using all your MAINVIEW products.
- *Using MAINVIEW* gives a more detailed description of how to use your MAINVIEW products. If you have more than one MAINVIEW product, this book will help you understand how all your MAINVIEW products work. This book will also help you use your products together and take advantage of the integration of all MAINVIEW products.
- The *OS/390 and z/OS Installer Guide* and *MAINVIEW Installation Requirements Guide* give instructions for basic installation of the product libraries.
- The *MAINVIEW Common Customization Guide* and the *MAINVIEW Administration Guide* provide customization and administration instructions for all MAINVIEW products.
- The *MAINVIEW Alternate Access Implementation and User Guide* describes how to use the MAINVIEW Alternate Access component. This component provides EXCP and VTAM communication to BMC Software products through ISPF without requiring a TSO subsystem to be active.
- The *MAINVIEW Alarm Manager User Guide* describes how to generate alarms when thresholds from MAINVIEW product views are exceeded.
- *Implementing Security for MAINVIEW Products* describes how to implement security for MAINVIEW for DB2 with the external security manager installed at your site.
- *MAINVIEW Products General Information* describes the MAINVIEW family of products.

DB2 Performance Products and DB2 Administration Products Libraries

The following books from the DB2 Performance products and DB2 Administration products libraries are included to help you install and administer the selectable components of MAINVIEW for DB2. These components are also used by other DB2 Performance products and DB2 Administration products provided by BMC Software.

- *Administrative Products for DB2 Customization Guide* provides instructions for installing and customizing the CATALOG MANAGER for DB2 (browse only) component.
- *System and SQL Performance for DB2 Customization Guide* includes an Installation Checklist to help you install the MAINVIEW for DB2 – Data Collector.
- *System and SQL Performance for DB2 Administrator Guide* describes the administrative functions of the MAINVIEW for DB2 – Data Collector.

MAINVIEW for DB2 Library

The following documentation gives specific information about the MAINVIEW for DB2 product:

- *MAINVIEW for DB2 Release Notes* summarize the new features in this release of MAINVIEW for DB2. You can use these notes to quickly see what is new.
- *MAINVIEW for DB2 and RxD2 Getting Started* is an introduction for new users of these products. The book helps you use these products to solve problems more effectively in a short time.
- The *MAINVIEW for DB2 User Guide* (Volumes 1 and 2) describes how to use the online views, analyzer, monitor, and trace services for the DB2 database administrator, system programmer, or performance analyst.
- The *MAINVIEW for DB2 Performance Reporter User Guide* describes how to create statistical batch reports about application activity and DB2 performance and resource usage for the database administrator, system programmer, or performance analyst.
- The *RxD2 User Guide* describes how to install and use the RxD2 product, which provides access to DB2 from REXX. This product also provides tools to query the DB2 catalog, issue dynamic SQL, test DB2 applications, analyze Explain data, generate DDL or DB2 utility JCL, edit DB2 table spaces, perform security administration, and much more. MAINVIEW for DB2 contains numerous hyperlinks to RxD2.
- The *MAINVIEW for DB2 Customization Guide* provides product-specific tailoring instructions. Use this book in conjunction with the *MAINVIEW Installation Requirements Guide* and the *MAINVIEW Common Customization Guide* during the customization process.
- Online tutorials are available by selecting option T from the MAINVIEW for DB2 Primary Option Menu or by pressing HELP (PF1/13) from the product application panels.

Chapter 1. Using MAINVIEW for DB2

This chapter gives an overview of how you can use MAINVIEW for DB2 to manage your DB2 systems.

Introduction

MAINVIEW for DB2 provides powerful realtime application performance analysis and monitoring for effective DB2 subsystem management. It comprises an easy-to-use, comprehensive set of services for database administrators, applications developers, and system programmers to track DB2 activity and status. Users can easily access any number of DB2 subsystems on multiple OS/390 systems in local and remote locations from a single terminal session, which can run under TSO, TSO/ISPF, VTAM or batch with an EXCP-supported terminal. It provides

- Online performance analysis and exception monitoring
- DB2 application tuning and workload analysis
- Historical reporting
- DB2 operations control
- MAINVIEW product integration

DB2 Online Performance Analysis

DB2 online performance analysis includes

- Current status and activity
- Exception monitoring
- DB2 Tuning Wizards
- Complete system management
- DB2 catalog and table access

Current Status and Activity

MAINVIEW for DB2 provides displays of DB2 status, current thread status—both summary and detail, locking, EDM and buffer pools, table spaces, I/O activity, logging, and DSNZPARM data necessary to analyze system performance and bottlenecks. This information is always available at very low overhead cost even when DB2 processing suspends.

These displays are easily accessible through both windows mode and full-screen mode applications. Hyperlinks and an EXPAND function allow the user to move quickly from summary to detail information. Windows mode technology provides context-sensitive help with extensive DB2 tuning information. In addition, screen customization, graphics, and multiple windows provide the flexibility for each user to present the data exactly as needed to solve any monitoring or analysis task.

Exception Monitoring

Key values can be set up for continuous background monitoring and exception reporting based on user-defined thresholds. The history of the monitored values, such as buffer pool utilization or number of transactions processed per workload, is available online in historical plots. Special exceptions can be defined to detect applications using excessive resources (runaway queries), with different user-defined exception criteria for TSO, IMS, CICS, DBATs, or batch jobs. The available options are described in the *MAINVIEW for DB2 Customization Guide*. Global exception displays show current status and a history of exception messages is available in the chronological Journal log.

DB2 Tuning Wizards

DB2 Tuning Wizards are designed to help you cope with today's complex systems and time pressures, turning data overload into usable knowledge about your DB2 systems. Wizards take advantage of the power of windows mode without requiring that you be an expert in all its usage techniques.

Each wizard is a set of views that leads you through all of the related information about a specific area of DB2 performance, providing critical DB2 tuning help and recommendations at just the point where they are needed. It presents the critical data in context with quick access to further details if needed.

Dynamic decision panels provide a consistent approach. Questions show the diagnostic paths, identifying ***what*** each path shows and ***why*** they could be important. Key indicators on the decision panels show whether a path is worth following, based on relevant current and long-term measurements.

Complete System Management

MAINVIEW for DB2 reports on key information from OS/390, IMS, and CICS to assist in understanding the total DB2 environment. It is also part of a family of integrated products for performance monitoring and automated operations of DB2, IMS, CICS, MQSeries, and OS/390.

Integration with other DB2 Performance Products

MAINVIEW for DB2 is integrated with several other DB2 Performance products provided by BMC Software in order to give you access to performance data from different perspectives. Hyperlinks are provided between MAINVIEW for DB2 and the following products:

- System Performance for DB2
- Pool Advisor for DB2
- APPTUNE for DB2
- OPERTUNE for DB2

See "Integrating Views with Other DB2 Products" on page 22 for more information.

DB2 Catalog Table Browse

Hyperlinks are provided from several MAINVIEW for DB2 windows-mode views to display data from DB2 catalog tables. You can access

- Full catalog lists from EZ Menus (for example: lists of databases, table spaces, and indexes from the EZDPS Page Set Menu)
- One specific object (for example: active plan or package information from the Active Threads view (THDACTV))

RxD2 Access

MAINVIEW for DB2 is also integrated with RxD2/FlexTools, a comprehensive set of flexible DB2 tools that provides DB2 catalog management, security administration, extensive Explain and SQL test facilities, and DB2 object maintenance. These functions can be invoked directly from MAINVIEW for DB2 in full-screen mode. RxD2/LINK, the base architecture of the product, provides a standard interface to DB2 from the IBM SAA REXX language.

Note: RxD2/LINK and RxD2/FlexTools currently work with DB2 versions 4.1, 5.1, 6.1, and 7.1; however, they are functionally stabilized at the 5.1 level.

DB2 Application and Workload Analysis

MAINVIEW for DB2 provides both application and workload analysis.

Application Trace

The major concern in most DB2 installations is how to understand and control application and ad-hoc query SQL performance. MAINVIEW for DB2 addresses these concerns with a flexible application trace facility that can be used both by DBAs and application developers. The application trace facility provides all the data necessary to detect and solve SQL problems and review applications before production migration. Trace requests are managed automatically through the DB2 Instrumentation Facility Interface (IFI).

Each trace request can be tailored to collect only the data required, from low-overhead summary traces (DB2 accounting records) through detail traces of SQL statements plus scans, I/Os, DDF events, and locks.

The traced data is viewed in integrated displays so that it is easy to see which scans, sorts, or I/Os are caused by which SQL statements without manual correlation. Summary displays provide high-level quick answers such as which SQL statement is consuming the most elapsed or CPU time. A chronological event trace shows a replay of the exact sequence of traced events. Details can be hidden to improve understanding of event flow or revealed when needed for detailed analysis.

Trace requests can be focused to narrow the trace data collection by selecting specific workloads by such criteria as plan or authorization ID. Additional exception filters, such as *elapsed time greater than 10 seconds*, also can be defined so that only trace data that needs to be analyzed is retained.

Workload Analysis

Workload analysis can be automated with low-overhead workload monitors and traces. Proactive monitoring reduces the effort required to stay on top of how DB2 is performing and collects the historical data you need online. Workload monitors set up by workload group can detect service-level exceptions. Summary traces with different exception filters for CICS, IMS, TSO, and batch can save key data needed for later analysis of problem transactions or queries.

In windows mode, you can define workload groups and track service-level objectives based on thread elapsed or in-DB2 elapsed time. Default workloads are defined for transaction and query workloads based on DB2 attach type. You can further refine these workloads into application groups using DB2 identifiers such as plan name or connection.

Historical Analysis

Historical data can be tracked with trace logs, online views, and offline batch reports from DB2 tables.

Trace Logs

The trace logging facility allows logging of both summary and detail trace data to external VSAM data sets. All trace log data sets are tracked in an online trace directory. These data sets can be viewed online or printed in batch for offline review.

Online Views

A historical perspective on the data in online windows-mode views is shown in two ways. First, when data is collected for a query to present a view, the data often covers both current interval and session data since DB2 started. Second, windows mode supports historical logging of data each interval. Interval records are written to the online historical data sets to capture the status of the monitored targets each time an interval completes processing. This data can be retrieved in the same views generally used for current-time data and includes complete DB2 statistics data, I/O and lockout information, and the data collected by monitors.

Batch Reports

MAINVIEW for DB2 provides a comprehensive set of offline batch reports for immediate analysis of historical accounting, statistics, and audit data. Control statements provide time selection, workload filtering, sorting, and summarization capabilities.

Complete batch reporting on the DB2 statistics, accounting, and audit records is supported by creating DB2 tables. Each table can be tailored to contain only the columns that you need. The detail accounting records can be summarized before they are loaded into DB2. MAINVIEW for DB2 provides predefined batch and QMF reports, and the full power of SQL, QMF, and GDDM is available for user-defined reporting. The accounting data tables can be summarized into daily, weekly, or monthly tables to support long-term reporting without excessive DASD usage. Both summarization and purge routines are provided.

Operations Control/DB2 Console

MAINVIEW for DB2 provides several unique features that aid in operations control of DB2:

- DB2 console. A chronological journal log (LOG DISPLAY) of DB2 messages and MVDB2 exceptions allows you to go back in time to analyze earlier problems. From this log, DB2 commands can be issued and the responses viewed. The *MAINVIEW for DB2 Customization Guide* describes how to activate the logging of DB2 messages and the authorization required for a user to issue DB2 commands.
- Multiple systems support not only provides immediate user access to multiple DB2 systems on the same CPU but also to any number of DB2s on multiple OS/390 systems in local and remote locations.

  The windows-mode technology also enables Single System Image (SSI) views that can pull together and even summarize data from multiple DB2 subsystems.

  This capability increases the span of control and saves time for all users managing more than one DB2. For example, a status overview display presents key indicators and exceptions for all DB2s, allowing for a quick check for potential problems. Any set of related DB2s, such as production or test, can be defined as a context for SSI monitoring.

  SSI views are even more important in a data sharing environment, since now a group of DB2 members that work together can be monitored as a whole. These views not only simplify sysplex management, but also increase understanding of this complex environment.
- Cycle screen refresh through full-screen status and exception displays from all DB2 systems provides dynamic monitoring of multiple DB2s.
- Seamless integration with the BMC Software MAINVIEW AutoOPERATOR products automates both DB2 operation and performance monitoring. Messages can initiate rules to take action, query the MVDB2 analyzer displays for additional information, or issue monitor commands. Exception messages can be sent to the OS/390 console to interact with other automated operator products.
- Total system status of all monitored values versus site thresholds can be seen at a glance in a graphic display with color support. Potential problems that have not yet resulted in exception conditions can thus be easily detected.
- User access through EXCP assures access even when TSO or VTAM does not respond.
- Security is provided per function and per DB2 system through user profiles and a user exit that controls access to thread activity displays.

MAINVIEW Product Integration

The MAINVIEW architecture integrates all the MAINVIEW performance products within a common communications framework that operates across multiple machines in multiple locations. This integrated architecture allows a single terminal session using one or more MAINVIEW products to monitor and manage multiple local or remote targets, whether OS/390 itself (sysplex and nonsysplex) or subsystems like CICS, IMS, MQSeries, and DB2.

MAINVIEW for DB2 runs in the same architecture as other MAINVIEW products. You can access all installed products from the MAINVIEW Selection Menu in one terminal session and transfer directly from one product to another. See *Using MAINVIEW* for further information.

Logging On to MAINVIEW for DB2

Follow these steps to access MAINVIEW for DB2:

1. If your ISPF main menu contains an option for MAINVIEW products, select that option.[1]

   Alternatively, on the COMMAND line of any ISPF panel, type **TSO MAINVIEW**. (MAINVIEW is a CLIST that you or your product administrator created during MAINVIEW for DB2 AutoCustomization.)

   The MAINVIEW Selection Menu is displayed, as shown in Figure 2.

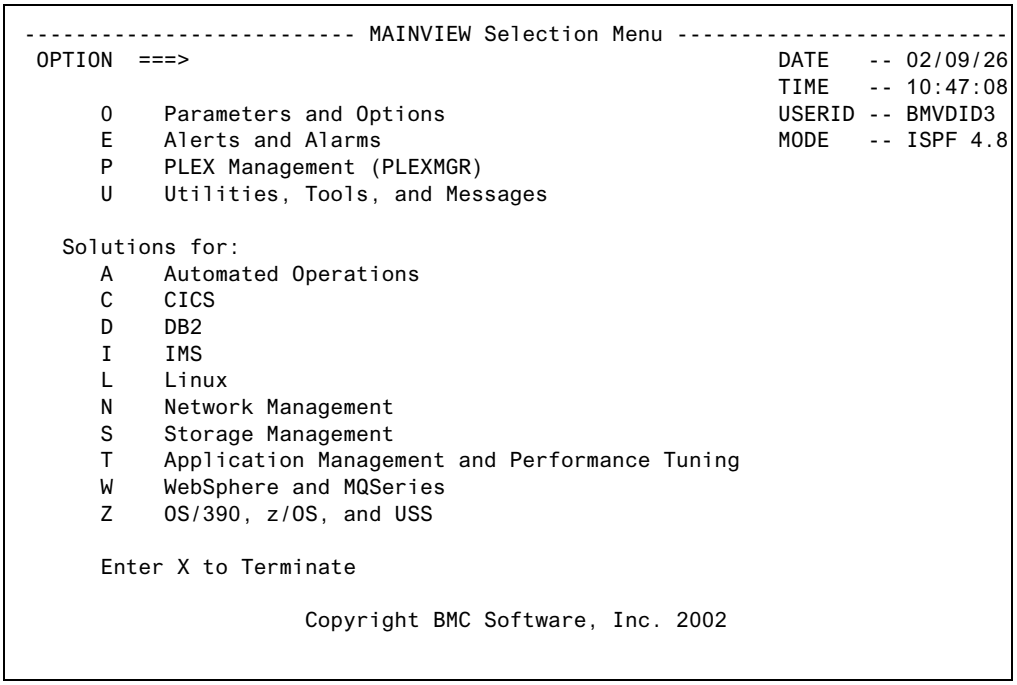

Figure 2. MAINVIEW Selection Menu

   From this menu and its related set of submenus, you can access any installed MAINVIEW product. Products that work together to provide similar solutions are grouped together in submenus. You also have access to a full set of MAINVIEW functions that work with all of your MAINVIEW products to help you solve your performance problems. (See *Using MAINVIEW* for a description of these functions.)

2. To access the DB2 Solutions submenu, shown in Figure 3 on page 8, select option **D** from the MAINVIEW Selection Menu.

[1] If you are using MAINVIEW Alternate Access, see the MAINVIEW *Alternate Access Implementation and User Guide* for information on accessing the MAINVIEW Selection Menu.

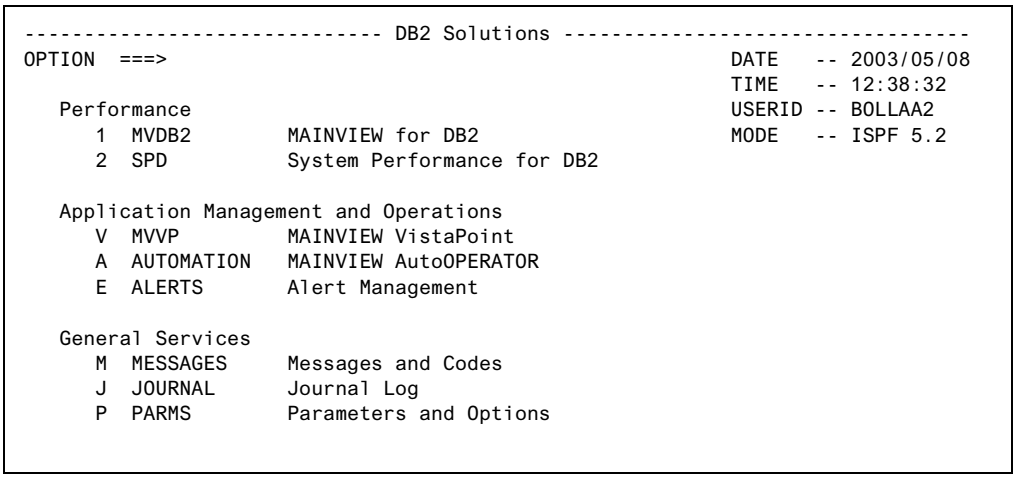

Figure 3. DB2 Solutions Submenu

3. To access MAINVIEW for DB2, select option **1** from the DB2 Solutions submenu.

   The Parameter Confirmation panel is displayed, as shown in Figure 4.

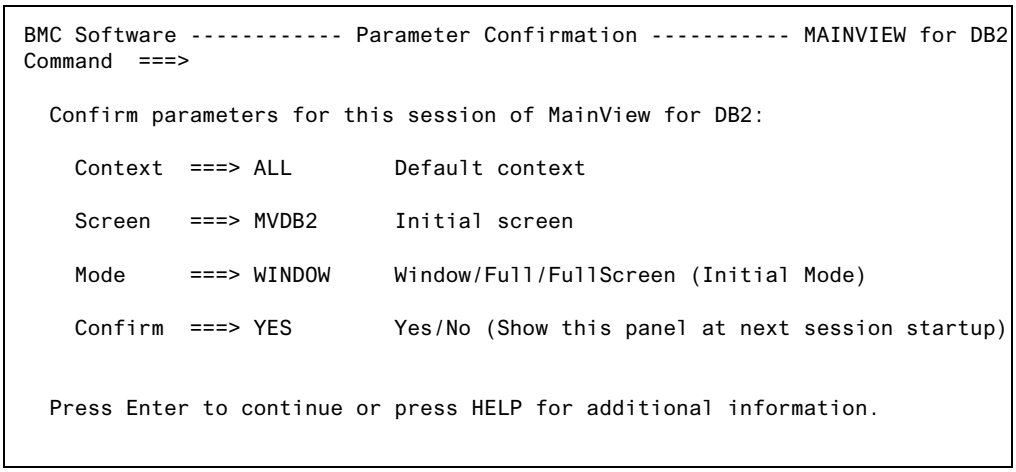

Figure 4. MAINVIEW for DB2 Parameter Confirmation Panel

This panel prompts you to confirm the parameters for your MAINVIEW for DB2 session. The first time you sign on, the default parameters are

- A context of all active DB2 subsystems
- An initial screen of MVDB2, which displays an Easy Menu called EZDSSI
- A primary display mode of MAINVIEW windows mode

You can change the parameters for a session by changing the values on this confirmation panel. You can also change the default parameters for future sessions of MAINVIEW for DB2 by selecting option 0.1.D, Parameters–Windows Mode, on the MAINVIEW Selection Menu.

4. Press **Enter** to accept the default session parameters.

   The EZDSSI view appears, as shown in Figure 5.

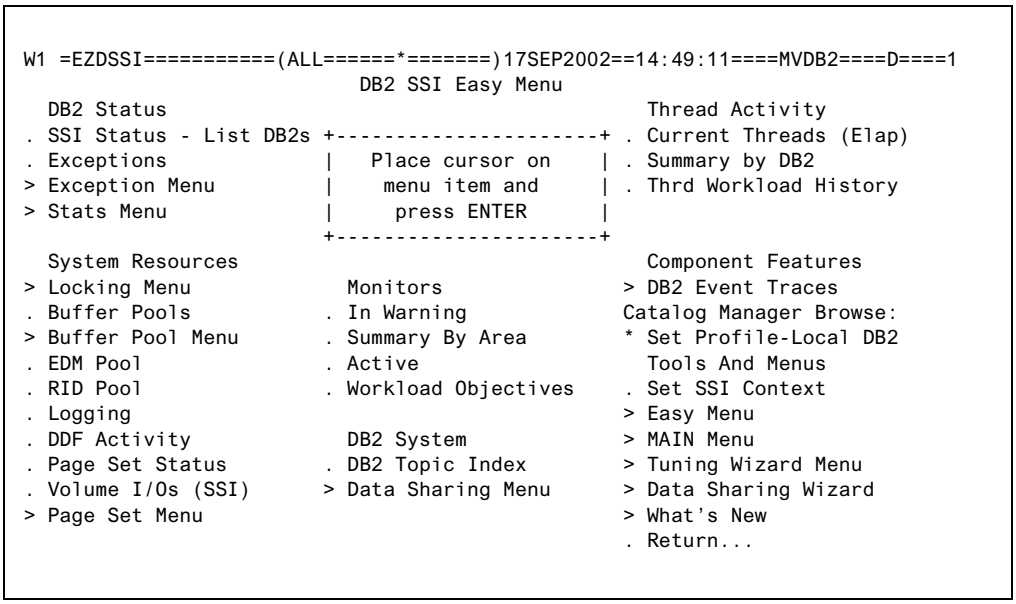

Figure 5. EZDSSI Easy Menu—Monitor Multiple DB2s

Note: Depending on your MAINVIEW settings, you might see the Session Control Parameters panel first. This panel prompts you to specify (or confirm) the CAS subsystem ID to be used for this MAINVIEW session. If you are not sure what CAS ID to use, check with your system administrator.

Some MAINVIEW for DB2 online services operate in windows mode, while others operate in full-screen mode. The EZDSSI view is a good starting point for working in windows mode. It provides direct access to context-oriented services for groups of DB2 subsystems.

However, if you expect to make more use of the full-screen services for a single DB2 target, you should specify **FULLSCREEN** in the **Mode** field of the Parameter Confirmation panel. In that case, the MAINVIEW for DB2 Primary Option Menu, shown in Figure 6 on page 10, is displayed when you sign on, rather than the EZDSSI view.

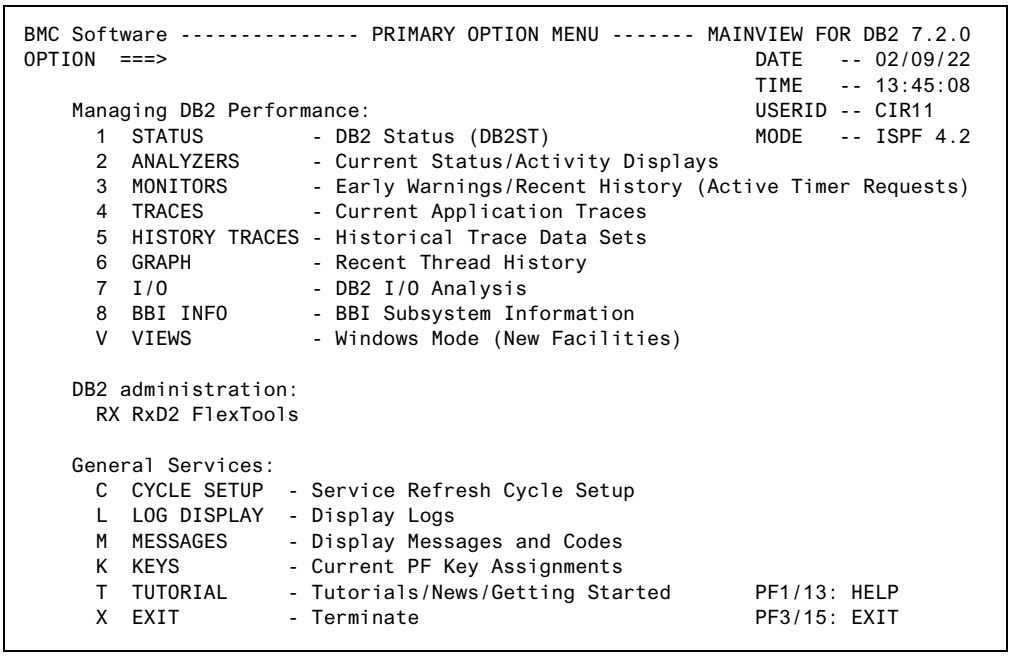

Figure 6. MAINVIEW for DB2 Primary Option Menu

Note: The RX option is only available if the RxD2/LINK and RxD2/FlexTools products are installed.

See Volume 2 of the *MAINVIEW for DB2 User Guide* for information on working in full-screen mode.

Chapter 2. Using Views and Wizards

This chapter gives an overview of how to use MAINVIEW for DB2 views. For information on how to use MAINVIEW windows mode, see the *Using MAINVIEW* book.

Introduction to Views and Wizards

MAINVIEW for DB2 views exploit MAINVIEW windows-mode technology to display extensive DB2 data covering the analysis of

- DB2 subsystems
- Buffer pools and group buffer pools
- Page set status and I/O
- Lock contention lockout events
- Current thread activity
- ZPARMs
- Dynamic SQL cache

All of this data, except for the last three groups, is available not only for the current period, but also with online history.

Context-sensitive help includes extensive DB2 tuning information, while screen customization, graphics, and multiple windows provide the flexibility for each user to present the data exactly as needed to solve any monitoring or analysis task.

The windows-mode technology also enables single system image (SSI) views that can pull together and even summarize data from multiple DB2 subsystems.

This capability increases the span of control and saves time for all users managing more than one DB2. For example, a status overview display presents key indicators and exceptions for all DB2s, allowing for a quick check for potential problems. Any set of related DB2s, such as production or test, can be defined as a context for SSI monitoring.

SSI views are even more important in a data sharing environment, since now a group of DB2 members that work together can be monitored as a whole. These views not only simplify sysplex management, but also increase understanding of this complex environment.

Note: The analyzer, monitor, and trace displays of MAINVIEW for DB2 are described in Volume 2 of the *MAINVIEW for DB2 User Guide*. These services are referred to collectively as running in full-screen mode.

Getting Started with Windows Mode

This section provides a short overview of windows mode from a DB2 point of view.

If you are new to windows mode, a short introduction is available in *MAINVIEW Quick Reference*, which you should read before using windows mode for the first time. Complete information is provided in *Using MAINVIEW.*

Accessing Windows Mode

The views in windows mode can be accessed in the following ways:

- From the MAINVIEW Selection Menu, select Option D—DB2, Option 1—MVDB2, and then select windows mode directly (mode WINDOW). (See "Logging On to MAINVIEW for DB2" on page 7 for complete instructions.) Or, select Option V from the MAINVIEW for DB2 Primary Option Menu (FULLSCREEN mode). This selection presents a menu of options to monitor all DB2s.
- From the MAINVIEW Selection Menu, select Option 1—Plex Manager, to access lists of available targets and products. In a view showing targets, like PLEXOVER, select (in the Context or Product field) a DB2 subsystem target where the product is shown as MVDB2 to access a menu of options to monitor one DB2 at a time.

Examples of these menus are shown in Figure 7 on page 14 and Figure 8 on page 15.

Note: You can also access MAINVIEW for DB2 windows-mode views from the System Performance for DB2 solution dialogs, if you have that solution installed. See the *System Performance for DB2 User Guide* for more information.

Accessing Views

Windows-mode data is displayed in ***views***. A view is a display of information within a single window. There are four view types: tabular, summary (tabular), detail, and detail summary.

Note: Summary views combine data records by one or more keys. These views are generally suffixed with a Z.

The simplest way to move between views is to use a ***hyperlink*** by selecting either a menu option or a highlighted field. (This action is similar to ***Expand*** in full-screen mode.)

You can access views by one of the following methods:

- Hyperlink from a menu option.
- Hyperlink from a highlighted field in another view.
- Type the name of the view on the COMMAND line.
- Select the name of a view from a list of views:
  - The MAIN view presents a list of submenus with lists of related views that can be selected.

    Note: You can access MAIN by using the S line command in the PLEXOVER view. Also, if you get lost, you can always type MAIN to get this list of views for any windows-mode product.
  - The VIEWS view presents a list of all distributed or site views.
  - The USERS view (available from MAIN) presents a list of all views that you have customized.

Easy Menus

All windows-mode products have ***Easy Menus*** to make it easier to access the information that you need. All DB2 Easy Menus begin with EZD.

EZDSSI—Monitor Multiple DB2s

The EZDSSI view, shown in Figure 7, is one of the two primary product menus. It is designed for use when you want an overview of several target DB2 subsystems together in SSI mode.

```
W1 =EZDSSI===========(ALL======*=======)17SEP2002==14:49:11====MVDB2====D====1
                          DB2 SSI Easy Menu
  DB2 Status                                        Thread Activity
. SSI Status - List DB2s +----------------------+ . Current Threads (Elap)
. Exceptions             |   Place cursor on    | . Summary by DB2
> Exception Menu         |    menu item and     | . Thrd Workload History
> Stats Menu             |     press ENTER      |
                         +----------------------+
  System Resources                                  Component Features
> Locking Menu             Monitors                > DB2 Event Traces
. Buffer Pools           . In Warning              Catalog Manager Browse:
> Buffer Pool Menu       . Summary By Area         * Set Profile-Local DB2
. EDM Pool               . Active                    Tools And Menus
. RID Pool               . Workload Objectives     . Set SSI Context
. Logging                                          > Easy Menu
. DDF Activity             DB2 System              > MAIN Menu
. Page Set Status        . DB2 Topic Index         > Tuning Wizard Menu
. Volume I/Os (SSI)      > Data Sharing Menu       > Data Sharing Wizard
> Page Set Menu                                    > What's New
                                                   . Return...
```

Figure 7. EZDSSI Easy Menu—Monitor Multiple DB2s

You can access this menu by entering windows mode through a menu option, as described on page 12, or by typing its name, EZDSSI, on the COMMAND line. In this case, be sure to set the context to a valid SSI context. You see the current context in the window information line.

The SSI context of ALL is always available and is the context set by default through the V option. There may be other SSI contexts already defined that group several DB2s together, such as PROD or TEST, or a data sharing group. Select the Set SSI Context option to view a list of defined contexts. Hyperlink on any context to return to EZDSSI with that context set. If you already know the SSI context name, on the COMMAND line type

```
CON ssicontext
```

See "Using SSI Contexts" on page 35 for more information. The window menu options present EZDSSI, context ALL, by invoking a screen definition named MVDB2. To modify the default context, add additional views to this screen, or create new screens, type **HELP SCREEN**, or see the *Using MAINVIEW* book.

EZDB2—Monitor One DB2

EZDB2, shown in Figure 8, is the second of the two primary product menus. It is designed for use when you want to focus on information about one target DB2 subsystem.

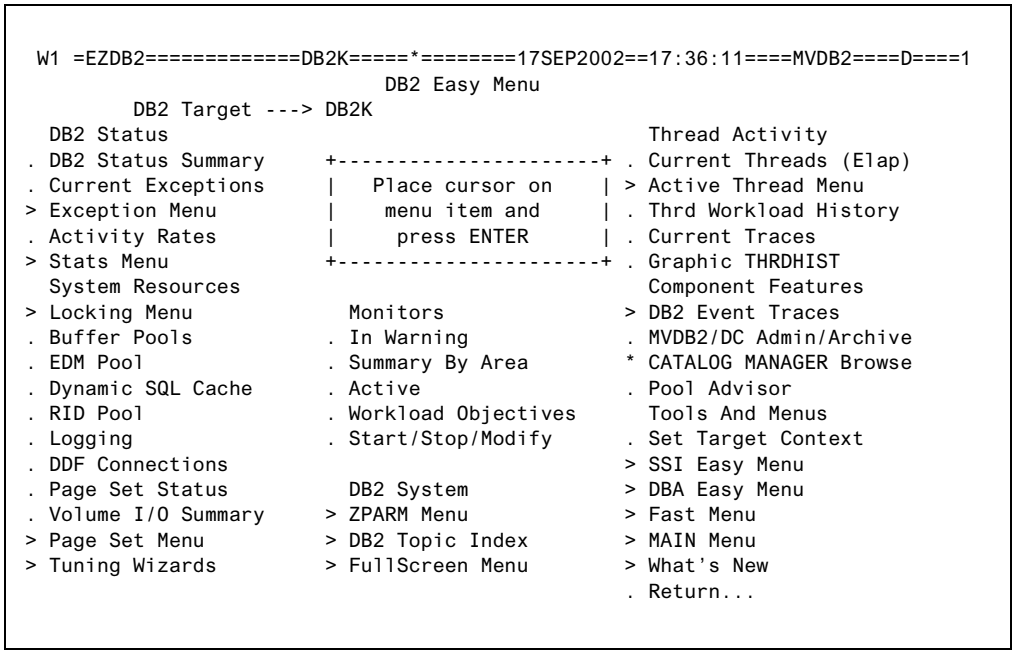

Figure 8. EZDB2 Easy Menu—Monitor One DB2

You can access this menu by one of these methods:

- Select a target DB2 (with product MVDB2) from Plex Manager, as described on page 12.
- Select EZDB2 from the EZDSSI menu.
- Type the menu name, EZDB2, on the COMMAND line.

In the last two cases, be sure to set the context to the name of the DB2 that you want to monitor. Select the Set Target Context option to view a list of defined targets. Hyperlink on any target to return to EZDB2 with that context set. If you already know the target name, on the COMMAND line type

```
CON db2target
```

EZDBA—Applications Menu

There is an alternative Easy Menu view, EZDBA, shown in Figure 9, that is oriented more toward applications analysis in one DB2.

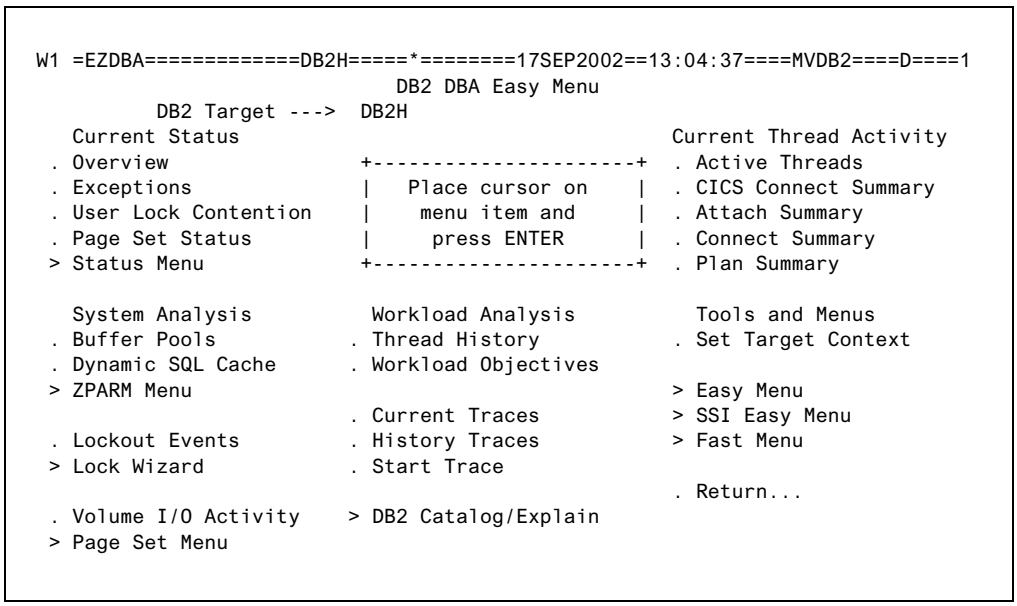

Figure 9. EZDBA Easy Menu—Applications Menu

You can access it from EZDB2, or it can be incorporated in a screen definition and specified as the default screen when entering windows mode.

EZDEXCPT—Exception Menu

An Exception Menu, EZDEXCPT, shown in Figure 10, can also be accessed from EZDB2.

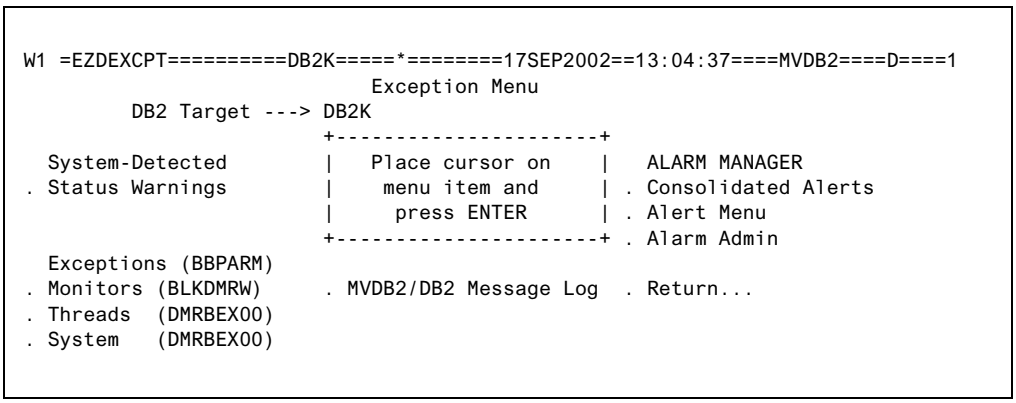

Figure 10. EZDEXCPT Easy Menu—Exception Menu

From this menu, you can easily access information about all the exceptions in your DB2 subsystem.

Other DB2 Easy Menus

Some of the options on EZDB2 and EZDSSI are shown with a greater sign (>) in front of them instead of a period (.), indicating that this hyperlink goes to another menu. For example, the status and statistics information available is so large that it is most easily accessed through another Easy Menu, EZDSTAT. Therefore, the main menus offer direct access to some of the most frequently used status views, plus access to the Status Menu.

Index Access to DB2 Performance Topics

Several index views are available to simplify quick access by DB2 topic to related product views without multi-level drill down, as shown in Figure 11:

```
W1 =EZDTOPIC=TOPICA===DB2KLA===*========17SEP2002==16:07:25====MVDB2====D====1

DB2 Topic Index - A          View     SSI Monitor ZPARM    Acctg  Trace
Abnormal Terminations        STSERVD   Y  THDAB     -       HT(X)  SUM
Aborts (Rollbacks)           STSERVD   Y  THDAB     -       HT(X)  DTL
Accounting Data              THDACTV   Y   -        -       HT     SUM
 Active Classes              DB2ST     -   -       ZPTRACED  -      -
Active Logs                  STLOGD    Y  LOGUT    ZPLOGD    -      -
Active Threads               THDACTV   Y  THD*     ZPTHDD    -      -
Address Space CPU            STDBSYSD  Y   -        -        -      -
ADMF - Hiperpools            BFRPL     Y   -        -        -      -
Agent Services(Intl DB2)     STAGENTD  Y   -        -        -      -
Allocations-Plan/Package     STBINDD   Y   -        -        -     DTL
Application Defaults          -        -   -       ZPHDECPD  -      -
Archive Logs
 Allocations                 DLOGS     -  ARCWA    ZPARCALD  -      -
 Definitions                  -        -   -       ZPARCDFD  -      -
 Waits                        -        -   -        -       TSTAT  SUM
 Reads for Backout           STLOGD    Y  ARC*      -        -      -
Assistant - Sysplex PRLL     STQPARD   Y   -       ZPDSHRD  HT     SUM
Async I/O                    BFRPL     Y   -        -       TSTAT  SUM
 Totals, DB2                 STBFRPLD  Y  PFTIO     -       HT     SUM
 Totals by DB                PSDBSZ    Y   -        -        -      -
 Totals by Object            PSOBSZ    Y   -        -        -     IO
 Totals per Pool             BFRPL     Y  PFTIO     -       TSTAT  SUM
 Totals by Volume            PSVOLSZ   Y   -        -        -      -
Attach (Connect) Types        -        -   -        -       HT     SUM
Authorization
 Caching                     STAUTHD   Y   -        -        -      -
 Definition/Processing       STAUTHD   Y   -       ZPAUTHD   -      -
 Authorization Failures      STAUTHD   Y   -        -       HT     EV/DTL
Automatic BINDs, Package     STBINDD   Y  BN*      ZPTHDD    -      -
Automatic BINDs, Plan        STBINDD   Y  BIND*    ZPTHDD    -      -
Auxiliary Tables             STQSQLD   Y   -        -       TSTAT  SUM

. Link to next page
```

Figure 11. Sample Index View

Start by accessing the DB2 Topic Index Menu, EZDTOPIC, as shown in Figure 12:

```
W1 =EZDTOPIC==========DB2KLA===*========17SEP2002==16:07:25====MVDB2====D====1

DB2 Topic Index
                     . A   . B   . C   . D   . E   . F   . G   . H

                     . I   . J   . K   . L   . M   . N   . O   . P

                     . Q   . R   . S   . T   . U   . V   . W   . X

                     . Y   . Z
```

Figure 12. EZDTOPIC Menu

From this menu, you can select one index view for topics that begin with each letter of the alphabet. At any point when looking at another view, you can enter a view name TOPIC*x* to directly access topics starting with that letter; for example, type TOPICL for lock information.

From each list of DB2 topics, you can then access detailed information for each of the listed topics.

Multiple hyperlinks are provided for each topic, as applicable:

- View, which provides detailed statistics or status information for one DB2.
- SSI, which accesses a similar single system image view, for an SSI context with multiple DB2s.
- Monitor, which accesses the DSERV monitor list view, selecting related monitors if active. From DSERV, the monitor plot displays that show more history can be accessed.
- ZPARM, which accesses a ZPARM view with one or more related DB2 parameters if applicable.
- Acctg, or accounting data, which accesses thread history if applicable.
  - HT indicates that data about this topic entry is included in the Thread Interval History views, and hyperlinks to HTLOGS to provide access to all available thread history data sources.
  - HT(X) provides the same hyperlink, but indicates that this topic entry is also related to an exception category in the Thread Interval History views.
  - TSTAT is shown if the data about the topic entry is only available in the full accounting data. The hyperlink accesses TSTAT for the current THRDHIST trace. A relevant section may be included as a parameter in the hyperlink to help identify where the data is; for example, in the ELAPSED or BPOOL section. (You can delete this parameter to see the complete TSTAT display.)
- Trace, which accesses related DB2 trace data.
  - EV indicates that a system event trace is available. The hyperlink accesses a related system event view. These traces are only available if the MAINVIEW for DB2 – Data Collector component is active.
  - SUM indicates that this item is available in the accounting data in a summary trace. The hyperlink accesses the current traces panel (CT), where active trace data can be viewed.
  - The event category (DTL, SQL, SCAN, LOCK, IO, DDF, DDFV) is shown if the event is captured in detail application traces. The hyperlink accesses the current traces panel (CT), where active detail trace data can be viewed, or a new detail trace can be activated with the ST command.
  - EV plus the event category (DTL, SQL, SCN, LCK, IO, DDF, DDV) are shown if the event is included in both a system event trace and a detail application trace. The hyperlink accesses a related system event view.

Integrating Views with Other MVDB2 Services

With the following MAINVIEW for DB2 functions, you can easily use the windows mode views along with the other full-screen MVDB2 services.

Hyperlinks

There are many hyperlinks from windows mode to full-screen displays of DB2 data that are more detailed than the data currently available in windows mode. PF3 returns you directly to your position in the windows mode view. For example, current thread activity is available in windows mode, but to see all the 200+ accounting fields for one specific user, a hyperlink goes to the full-screen DUSER display.

Hyperlinks from full-screen displays to windows-mode views are provided with a programmed TRANSFER command on displays where superior information is available in views.

Transfers

You can transfer directly from windows mode to full-screen mode by typing a transfer command on the COMMAND line of a view. To transfer to a DB2 display, type

```
TRANSFER target DB2;serv
```

A few examples are

```
TRANSFER DB2G DB2;LOG      to access the Journal Log display for DB2G
TRANSFER DB2P DB2;EX DB2ST DELTA  to see delta values in DB2ST for DB2P
TRANSFER DB2P DB2;RX       to access RxD2 for DB2P
```

To transfer from full-screen mode to windows mode, use

```
TRANSFER target MVDB2;view
```

Return

If you entered windows mode with the V option on the Primary Option Menu, pressing PF3 repeatedly or typing QUIT or RETURN returns you to the Primary Option Menu. From here, you can access all the full-screen displays as usual. If you entered windows mode through either Plex Manager or the D option on the MAINVIEW Selection Menu, pressing PF3 repeatedly or typing QUIT or RETURN returns you to the MAINVIEW Selection Menu. You can then choose Option 5, DB2, to access the full-screen displays.

Monitor Data

All the data collected by the DB2 monitors is available in both windows-mode views and full-screen displays. Use the windows-mode views when you need an SSI overview or want to use the additional customization options. Use full-screen displays when you want to change the active monitors or add new ones.

Integrating Views with Other MAINVIEW Products

If other MAINVIEW products are installed, they are available from the MAINVIEW Selection Menu or Plex Manager. In Plex Manager, you see a list of all targets and the products monitoring them.

Screens with Multiple Products

You can define screens (multiple windows with different views) that include views from different products when you want to look at related data across targets. For example, you might want to look at CICS systems that are accessing DB2 on the same screen with one of the MVDB2 current thread activity views.

Product Transfers to Full-Screen Mode.

You can transfer to another product running in full-screen mode with the same command shown above for DB2:

```
TRANSFER target product;serv
```

In this case, replace the *product* variable with the product family name (AO, CAO, CICS, DB2, IAO, IMS, MAO).

Product Transfers to Windows Mode

From within windows mode, you can transfer to another product running in windows mode with the SET or CONTEXT command. SET presents a panel where you fill in the target, product, and view name. If you prefer, you can type this information directly on the COMMAND line:

```
CONtext target product;view
```

In this case, use the product name shown in windows-mode views (CMF, MVCICS, MVDB2, MVIMS, MVMVS, PLEXMGR).

To transfer from full-screen mode to windows mode, type

```
TRANSFER target product;view
```

with the product names shown above.

VistaPoint Workloads

If VistaPoint is installed, you can combine DB2 workload data with workloads from other products under common application names. See Chapter 3, “Managing Views” on page 29.

Integrating Views with Other DB2 Products

Several hyperlinks are provided between MVDB2 and the following DB2 products or components if they are active.

System Performance for DB2

MAINVIEW for DB2 is included as part of the System Performance for DB2 solution. If you have this solution installed, you have access through a different clist to advisor dialogs. These dialogs provide hyperlinks to reports in Pool Advisor for DB2 and OPERTUNE for DB2 and to views in MAINVIEW for DB2. You can access each of these products directly, or use hyperlinks to access relevant information for each of the following topics:

- Logs
- Threads
- ZPARMs
- Page sets
- DDF
- Data sharing
- I/O
- Workloads
- Pool Management
- Miscellaneous

See the *System Performance for DB2 User Guide* for more information about these dialogs.

Hyperlinks to Data Collector Reports

MVDB2 provides hyperlinks to various reports that are created in the Data Collector, including reports from the MAINVIEW for DB2 – Data Collector, APPTUNE for DB2, and Pool Advisor for DB2. The hyperlinks in the MVDB2 views are only active if the presence of that product or component has been confirmed in the system where the PAS and target DB2 reside.

These reports use Report Manager functions that have sysplex connectivity. You can hyperlink from MVDB2 to view reports for any DB2 within the sysplex where your MAINVIEW user session resides. At this time, hyperlinks to DB2s outside of that sysplex are not supported.

Note: The Report Manager supports standard terminal sizes only. If you a using a terminal emulator that allows non-standard screen sizes, the hyperlinks to the reports will fail.

MAINVIEW for DB2 – Data Collector

Hyperlinks are provided from several MVDB2 views to the following MAINVIEW for DB2 – Data Collector functions:

- Administration options of MAINVIEW for DB2 – Data Collector that control traces and output groups
- The MAINVIEW for DB2 – Data Collector Trace Archive Directory to view available archive logs for batch processing
- Several Data Collector reports, which provide information on such topics as
  - Common Explain for an active thread, with tuning recommendations
  - List of EDM pool CTs and PTs
  - ZPARM change log of actions taken through OPERTUNE for DB2
  - Data sets in use by a thread

APPTUNE for DB2

A hyperlink is provided from the Active Threads view (THDACTV) to access detailed SQL statement information for plan analysis.

Pool Advisor for DB2

A hyperlink is provided from the EZDB2 menu to access advice on optimization of DB2 storage resources, including all the major pools.

Hyperlinks to CATALOG MANAGER for DB2

CATALOG MANAGER in browse-only mode is available as a selectable component of MVDB2. Hyperlinks are enabled if you install this component, or if you have the full CATALOG MANAGER product installed.

The hyperlinks from MVDB2 display data from DB2 catalog tables. You can access

- Full catalog lists from EZ Menus (for example: lists of databases, table spaces, and indexes from the EZDPS Page Set Menu)
- One specific object (for example: active plan or package information from the Active Threads view (THDACTV))
- The CATALOG MANAGER Browse Menu, shown in Figure 13, from the EZDB2 Easy Menu

```
DB2K-  -------------  Catalog Browser 7.2.01   Primary Menu  -----------------
Command ===>



Enter object type and qualifier for an object list


Object type . . .  PL
                   DB Database   TS Tablespace   PL Plan      ST Strings
                   SG Stogroup   SU SysPrivUser  AL Alias     LO Location
                   TB Table      SY Synonym      US User      CK CheckConst
                   VW View       PG Package      CO Column    PR Procedures
                   IX Index      CI Collection   DM DBRM

Qualifier . . . .

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                       as an unpublished licensed work.
                            All rights reserved.
```

Figure 13. CATALOG MANAGER for DB2 Browse Menu

Access to CATALOG MANAGER requires that a DB2 local to your UAS is established in your ISPF profile. EZDSSI provides a hyperlink to STSYS, a view by system and DB2. The hyperlink on this view to CATALOG MANAGER is made with the DB2 SSID, thus establishing the connection. Other hyperlinks in the various views are defined with the DB2 location to allow connection to a remote DB2 through DDF.

Either from the Primary Menu or from direct hyperlinks to an object, you will be presented with an object list view. From here, you can use the **S** or **D** line commands to view detail information about that object. You can enter **CMD** on the Command line to access a list of commands available to you. If you receive a message, enter **TSO BMCMSGmsgID** to access information about the message.

Using the DB2 Tuning Wizards

This section discusses how to use the DB2 tuning wizards.

DB2 tuning wizards are designed to help you cope with today's complex systems and time pressures, turning data overload into usable knowledge about your DB2 systems. Wizards take advantage of the power of windows mode without requiring that you be an expert in all its usage techniques.

Each wizard is a set of views that lead you through all of the related information about a specific area of DB2 performance, providing critical DB2 tuning help and recommendations at just the point where they are needed. It presents the critical data in context with quick access to further details if needed.

Dynamic decision panels provide a consistent approach. Questions show the diagnostic paths, identifying ***what*** each path shows and ***why*** they could be important. Key indicators on the decision panels show whether a path is worth following, based on relevant current and long-term measurements.

Key indicators on the decision panels are the sign posts to help you decide which paths to follow to identify and solve problems. The measurements have defined thresholds that highlight problems as appropriate. View customization allows each user to modify these thresholds as needed. Often, you can immediately determine whether a path is worth following, avoiding false trails and time-consuming analysis.

Figure 14 shows an example of a decision panel. It is the start point of the Lock Analysis Wizard.

```
W1 =WZLOCK============DB2G54C==*========17SEP2002==16:29:20====MVDB2====D====1
 ** LOCK WIZARD **                      Target Values..... DBOH

 Data Sharing?
 . Set Context to Group
 . => Analyze Group

 Analyze Single DB2?                                      Interval   Session
 . Set Context to DB2                  Timeouts.........         0         0
                                       Deadlocks.........        0         0
 Current Interval OK?                  Lock Suspensions..        0         0
 . Review History and set TIME         Global Suspensions        0         0

 Are any values high?
 . Check the System

 Current Lock Contention?              Suspended Threads.        0
 . By DB/TS
 . By Thread                           Susp.Transactions:
                                        ** CICS Threads..        0
 All OK?  Congratulations!              ** IMS Threads...        0
   (PF3 to Exit Wizard)
```

Figure 14. WZLOCK View—Lock Analysis Wizard

You can use a tuning wizard anytime without a long learning (or relearning) curve. Help is available on each of the decision points, in addition to the standard field help. These help panels include navigation tips as well as DB2 tuning information.

The list of wizards is expected to expand over time. The tuning wizards are accessed from the DB2 Tuning Wizard Menu, as shown in Figure 15. New wizards are added as they are developed.

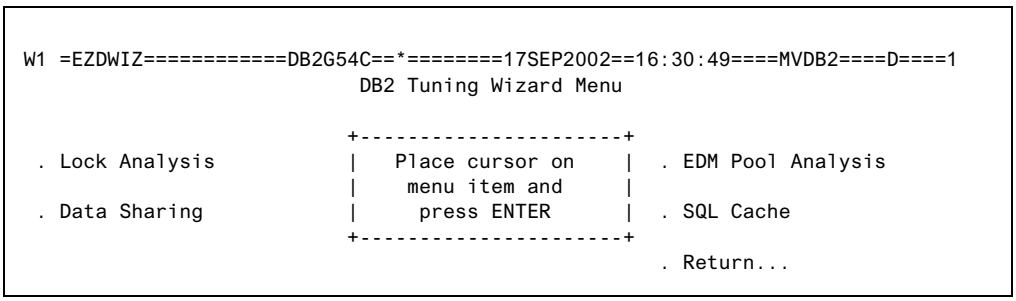

Figure 15. EZDWIZ Menu—DB2 Tuning Wizards

Viewing DB2 Performance over Different Periods

This section presents how DB2 performance data can be viewed over different periods.

There are two different ways that a historical perspective on the data is shown. First, when data is collected for a query to present a view, the data often covers more than just one period. Second, windows mode supports historical logging of data for each interval. This data can be retrieved in the same views generally used for current-time data.

Data Collection Periods

Most DB2 windows-mode statistics are available as *interval* and *session* counts, except for current thread information, which is measured for the life of the thread to the time of the query.

Interval data represents the near-term performance of your DB2 targets. Typically, the interval is defined as 15 minutes. When you issue a view query for interval data, MAINVIEW for DB2 displays data for the current interval, which means that you see data from the beginning of this interval until the query was issued. The data collected represents that portion of the interval that has elapsed, some time between 1 to 15 minutes. This result is similar to the DELTA concept in the MAINVIEW for DB2 full-screen displays.

Session data represents a summary of performance information since the monitored DB2 system started.

There are naming conventions for views to differentiate between these two types of data. If the data shown is interval data, there is no special suffix, while session data views are suffixed with an S. For example, total I/O counts per page set are shown for the interval in view PSTIO, while session counts are shown in PSTIOS.

Many detail DB2 statistics views show both interval and session counts together.

The monitor data available in windows mode is more granular, and includes ***realtime*** values for the most recent period, typically the last 60 to 90 seconds. This data provides a much better indication of current problems. Realtime views are suffixed with an R.

In addition, some monitor views contain all three periods in one view. These ***cluster*** views provide a better perspective of how these indicators have behaved over time. Cluster views are suffixed with a C.

Historical Data

Statistics data is available both for the current period and from online historical data sets. Interval records are written to these data sets to capture the status of the monitored targets each time an interval is completed.

You can retrieve these interval records by date, time, and duration with the TIME command to analyze past problems or performance concerns. In this case, the interval counts are generally for a full past interval. The actual duration of the time span that the retrieved data covers is shown on the view in the window information line.

The DSLIST view in Plex Manager shows which history data sets are available and the periods covered.

Chapter 3. Managing Views

This chapter describes system administration and operations views that are specific to MAINVIEW for DB2.

Defining a DB2 Workload

This section discusses how to define a DB2 workload.

A workload groups DB2 threads for performance reporting and analysis. You build a DB2 workload using a workload definition dialog called DWKLDDEF, which allows you to

- Establish a service-level objective for expected workload performance

  Performance is measured by the service-level objective set for a workload. The service-level objective comprises

  – Response time limit set as a maximum threshold for acceptable performance

  – Percentage of transaction completions within the specified response time limit

- Assign a composite name to that workload grouping

Your defined service-level objectives and composite workloads are reported by MAINVIEW VistaPoint. MAINVIEW for DB2 also reports your defined workloads in response time views.

Planning a DB2 Workload Definition

To create a DB2 workload:

1. Access the DWKLDDEF dialog.
2. Start an edit session.
3. Save the workload definition.
4. Install the definition.

Before you begin, you need to establish workload conventions, identify critical monitoring periods, and set a workload service-level objective. A service-level objective is the minimum acceptable performance of a workload based on a user-specified transaction completion time and expected transaction completion percentage.

Default Workloads

Default workloads have been defined for the transaction and query connections to DB2, based on connection type. These workloads include

- IMSMPP
- CICS
- TSO
- CAF
- DBATDB2
- DBATDRDA

Batch-type work is not included in the default set.

Please review the values specified as response time objectives, objective percentages, and start and end times. They are only meant as a starting point.

The DOBJx views show the results of the data gathered using these definitions. You might want to review them for a while to see how effective these objectives are in your environment. Then you can use this information in planning your changes. You can modify, delete, or add workloads.

Establishing Workload Conventions

Workload definitions are created in edit mode. When they are saved, they are saved in BBPARM member BBPTWK00 by default. These members can be in a shared library. If they are not in a shared library, you should have a consistent naming convention for similar workload members in different BBPARM data sets.

Shared BBPARM Library

Your BBPARM library should be accessible to all PASs. This access keeps the number of workload definitions to a minimum. Otherwise, duplicate workload definitions must be created for each linked PAS to ensure that performance data from all targets is reported. Maintenance is easier if updates are made to a single workload definition rather than simultaneous changes to similar definitions in different parameter libraries.

Naming Conventions

Consistent names for workloads are important when

- Workload definitions cannot be stored in a shared BBPARM library

  Similar workloads in different BBPARM libraries must be easily identifiable for workload definition updates.

- Sorting and filtering by workload or composite name is available in other views

  Sorting and filtering are much easier with consistent names.

Workload names should be a brief representation of the work performed by the target. For example, DB2PAY1A identifies DB2 payroll transactions running in the DB21A subsystem. Workload names can be a maximum of eight characters.

Composite names identify the workload grouping by the group's function. For example, a workload composite with a name of FINANCE indicates a workload's targets are completing financial transactions. Composite names can be a maximum of eight characters.

Identifying Critical Workload Monitoring Periods

During the day, there are periods when transaction performance is not at risk because of the relatively light load on the system. Other daily periods are critical. The demands on system resources lead to contention and transaction delays. You should monitor all your workloads during your site's daily periods when adequate transaction performance is essential. Workloads belonging to the same composite workload should have identical monitoring periods.

DWKLDDEF—DB2 Workload Definition

The DWKLDDEF view, shown in Figure 16, is the starting point for defining a DB2 workload.

```
>W1 =DWKLDDEF==========DB2G54C==*========(00 BROWSE        )====MVDB2====D====7
CMD Workload Composite Target   System   Description               Sta Resp %Tr
--- Name---- Name----- -------- -------- ------------              --- ---- ---
    ALLWORK  SAMPLE    *        *        Sample DB2 Workload       Act 1.00  95
    CAF      DB2SAMP   *        *        CAF DB2 Workload          Act 5.00  90
    CICS     DB2SAMP   *        *        CICS DB2 Workload         Act 1.00  95
    DBATDB2  DB2SAMP   *        *        DBAT DB2 Workload         Act 5.00  90
    DBATDRDA DB2SAMP   *        *        DBAT DRDA Workload        Act 5.00  90
    IMSMPP   DB2SAMP   *        *        IMS MPP DB2 Workload      Act 1.00  95
    RRSAF    DB2SAMP   *        *        RRSAF DB2 Workload        Act 1.00  95
    TSO      DB2SAMP   *        *        TSO DB2 Workload          Act 5.00  90
```

Figure 16. DWKLDDEF View—DB2 Workload Definition

You can select the DWKLDDEF view at any time by typing one of the following view names on the COMMAND line:

- **DWKLDDEF**

  Provides direct access to a list of existing DB2 workload definitions.

- **ADMIN**

  Groups views by system and operations administration functions and is available from the MAIN menu when MAINVIEW for DB2 starts. Select DWKLDDEF from the list of ADMIN views.

- **VIEWS**

  Provides an alphabetical list of all views. Select DWKLDDEF from the list of views.

To add a new or change an existing DB2 workload definition, you must first type **EDIT** on the COMMAND line of the DWKLDDEF view.

The window information line changes from BROWSE to EDIT. In edit mode, you can use

- Primary commands to
  - ADD a new definition
  - CANCEL any changes made

    This command discards any changes made to the definition since the last save.
  - SAVE a definition you have added or changed
  - END your edit session

    This command saves any changes you made and returns the previous view.
- Line commands to select an existing definition to
  - ADD a definition using one you selected as a model
  - CHAnge the selected definition
  - DELete the selected definition
  - UNDelete or recover the selected definition if it is not saved
  - INStall or activate the selected definition

Using the DB2 Workload Definition Dialog

Online help describes how to use the fields in the dialog. Press your HELP key for descriptions of the fields by

- Workload

  Name of the workload.

- Composite

  Name used to group workloads together.

- Target

  Name of the DB2 target to be monitored.

- System

  SMFID of the OS/390 image where the target DB2 is running.

- Description

  Describes (maximum of 24 characters) what this workload definition is for.

- Monitored Resources

  For DB2, these are

  – Connection Type
  – Plan Name
  – Authorization ID
  – Connection Name
  – Correlation ID
  – Location Name

- Service-Level Objective

  This field comprises user-specified

  – Response time in seconds; for example:

    `Response time of ===> 1.0`

  – Percentage of transactions to complete within specified response time; for example:

    `for ===> 95`

  – Start time monitoring is to begin; for example:

    `Between ===> 00:00`

  – End time when collection of response or elapse time data is to stop; for example:

    `and ===> 24:00`

- DB2 Only

  Specifies whether total elapsed time should be used instead of In-DB2 elapsed time (In-DB2 times require accounting class 2 to be active). If **`YES`** is specified, In-DB2 elapsed time is used. If **`NO`** is specified, total elapsed time (since the first connection of the thread to DB2) is collected.

Saving and Installing the DB2 Workload Definition

After you have completed the DB2 workload definition dialog, you must save your definition and install it before it becomes active. Typing **SAVE** on the COMMAND line saves the workload definition you modified or added and retains edit mode for more changes. Pressing the END key saves your definition and returns the previous view.

Typing the **INStall** line command next to the listed workload definition starts monitoring of transaction response time if you are within the defined time range. The DWKLDDEF status field changes from inactive to active.

If you updated an existing workload definition with the CHAnge line command and saved it, the INStall command deactivates the current definition. Monitoring begins with the parameters that were set in the updated workload definition.

INStall immediately updates the local BBI-SS PAS. If you are running MAINVIEW for DB2 in multiple PASs, you might want to issue the INStall on any additional PASs now. Otherwise, any SAVEd definitions become active when those PASs are recycled.

DWKLDDET—DB2 Workload Definition Detail

The DWKLDDET view, shown in Figure 17, provides detailed information about the status and parameters in effect for a definition selected from the DWKLDDEF view. It shows the current values of the parameters.

```
>W1 =DWKLDDEF=DWKLDDET=DB2G54C==*========(00 BROWSE        )====MVDB2====D====1
    Workload. CICS     Description CICS DB2 Workload
    Composite DB2SAMP  ConnType... CICS
    Target... *        PlanName...
    System... *        AuthID.....
    Response.  1.00    ConnName...
    %Trans...    95    CorrID.....
    Start.... 06:00    LocName....
    End...... 06:00
    DB2 Only. Y
    Deleted.. N
    Status... Active
```

Figure 17. DWKLDDET View—DB2 Workload Definition Detail

The values shown might not be in effect if the parameters have changed and

- Changes were activated with the INStall command, but not SAVEd

  The status of the definition is Install. The installed parameters are in effect.

- The changed parameters were SAVEd, but not INStalled

  The status of the definition is Modified. The saved parameters are the current values. Saved changes are activated when they are installed or the PAS (product address space) is restarted.

You can use the same primary and line commands from this view as from DWKLDDEF. Before you can use these commands, you must first type **EDIT** on the COMMAND line.

The window information line changes from BROWSE to EDIT.

Online help describes how to use these commands. Select the view name with your cursor, press the HELP key, and then select Actions from the Help window.

Using SSI Contexts

One of the most powerful features of windows mode is its ability to combine data from multiple targets in one view in single system image (SSI) mode. Even the data from DB2 subsystems operating on different OS/390 images can be brought together.

The default SSI context of ALL is always available and is the one set if you enter windows mode from the DB2 Primary Option Menu. There may be other SSI contexts already defined that group several similar DB2s together, such as PROD or TEST, or a data sharing group.

As you navigate between MVDB2 views, it is often necessary to set another context to look at a different group of DB2s or at a single DB2. You might want to switch out of SSI mode to analyze one DB2 target, or remain in SSI mode but temporarily narrow the focus. This focus is called SCOPE.

The DB2 Easy Menus have utility options to set context. From EZDSSI, you can hyperlink to view a list of defined contexts and select one to reset the context. From EZDB2 and EZDBA, you can hyperlink to view a list of target DB2s and select one to reset the context to a new target.

Using Commands to Change Context

There are four commands that affect the current context. When you know the name of the target or SSI context that you need, you can type the information directly in one of these ways.

For more details about these commands, type **HELP** followed by the command name; for example, HELP CON.

CONtext Command

The CONtext command is the fastest way to switch between contexts. The syntax of the command is

```
CONtext target product;view
```

The product and view names are optional. For example, type

```
CON DBGG
```

to change the context to the data sharing group DBGG that has been previously defined as an SSI context.

CONtext establishes the current context, product, and target for the active window. Subsequent views displayed in that window inherit these values.

SET Command

The SET command invokes an ISPF dialog to display a panel where you can overtype context values. You can change context, product, server, scope, and view. Like CONtext, it sets these values for the current window. Type **HELP SET** for more details.

SETD Command

The SETD command is similar to SET in that it invokes an ISPF dialog to display a panel where you can overtype context values. You can change context, product, and scope. SETD changes the default settings of new windows but does not affect the context of the current window. It is useful when several windows need to be opened to a new context.

SCOPE Command

You can restrict views within an SSI context to show data from a single target using the SCOPE command. The syntax of this command is

```
SCOpe target|*
```

Target narrows the focus to one target. The asterisk reverses back to the full SSI context.

Plex Manager Views of SSI Contexts

Plex Manager provides views that show you the defined SSI contexts and the targets within the contexts. Type

```
CON * PLEXMGR;CONACTZ
```

to view a summary list of all the SSI contexts known to the current Plex Manager. It shows the number of targets and number of active targets. You can use this command whenever you need to review the SSI contexts available to you.

A hyperlink from CONACTZ shows you all the targets in the selected context in the view CONACT.

Additional dialogs allow the definition of new SSI contexts. Refer to the *MAINVIEW Administration Guide* if you need to perform this function. These views are available through the ADMIN list of views on the MVDB2 MAIN menu.

Securing Resources

This section discusses how to update security for the MAINVIEW for DB2 resources.

External security managers (ESMs), such as CA-ACF2, CA-TOP SECRET, or RACF can be used to protect access to a product and its resources, such as views, view actions or commands, and data. Product resources are identified to your ESM as a resource entity that can be protected so that existing security rules, permits, or profiles can be used.

Using the security resource administration views, you can see the access authorizations that are enabled for the MAINVIEW for DB2 resources by default. These views are SERDEF and SERDEFE. You can use them to enable, disable, and change security resource definitions. For information about securing resources, see *Implementing Security for MAINVIEW Products*.

SERDEF—Security Resource Definitions

You can use the SERDEF view, shown in Figure 18, to disable or enable resource definitions or to select one to view and change its attributes.

```
>W1 =SERDEF============DB2KLA===*========(00 BROWSE        )====MVDB2====D===28
CMD Description                              Enab Change Comment
--- ------------                             ---- --------------
    Default - Table Data                     Yes
    Default - Any Table Actions              Yes
    Default - Alter Data Set                 No
    Default - Specific Table Action          Yes
    Any Action (MVDB2 Views)                 Yes
    Appl Monitor - Table Data                Yes
    Workload Definitions - Table Data        Yes
    Workload Definitions - Any Action        Yes
    Workload Definitions - Action - Install  Yes
    Workload Definitions - Action - Edit     Yes
    Workload Definitions - Alter Data Set    No
    Appl Workload- Table Data                Yes
    BufferPool - Table Data                  Yes
    DB2 Dataset Opens - Table Data           Yes
    DB2 Commands - Table Data                Yes
    RIDLIST - Table Data                     Yes
    Authorization Failures - Table Data      Yes
    SQL Cache - Table Data                   Yes
    IoActivity - Table Data                  Yes
    LockOuts - Table Data                    Yes
    Monitor - Table Data                     Yes
    Status - Table Data                      Yes
    SQL Cache Stmts - Table Data             Yes
    Thread Interval History - Table Data     Yes
    TLDS and MVDB2/DC Traces - Table Data    Yes
    Users - Table Data                       Yes
    ZPARM - Table Data                       Yes
    ZPARM - Any Action                       Yes
```

Figure 18. SERDEF View—Security Resource Definitions

You can select the SERDEF view at any time by typing one of the following commands on the COMMAND line:

- **SERDEF**

  Provides direct access to a list of existing resource definitions.

- **ADMIN**

  Groups views by system and operations administration functions and is available from the MAIN menu for MVDB2. Select SERDEF from the list of views.

- **VIEWS**

  Provides an alphabetical list of all views. Select SERDEF from the list of views.

Implementing Security for MAINVIEW Products describes how to use the SERDEF view.

SERDEFE—Security Resource Definition Detail

The SERDEFE view, shown in Figure 19, provides detailed information about a resource definition selected from the SERDEF view. It shows the class and entity names and other attributes for that definition.

```
>W1 =SERDEF===SERDEFE==DB2G=====*========17SEP2002==12:09:48====MVDB2====D====1
    Res Key..... BBP9#DEFAULT Desc..... Default - Specific Table Action
     Enabled.... Yes          Comment.. *Unchanged*
                              Type..... DEFAULT
    ESM Info---.
     Class...... $BBM         Entity... BBM.&PRODUCT.&CONTEXT.&INTTABLE.&INTACT
     VolSer..... *NONE*       Intent... READ
     LogAuth.... Allow        LogFail.. Allow
    Substitution Values
     IntTable... #DEFAULT     ExtTable. #Default
     IntAction.. ACTION       ExtAction
     IntActTab.. *NONE*       Product.. MVDB2
     Parms?..... No           Fields?.. No
    Update Info.              Mem Suff. 00
     UpdSystem.. *NONE*       UpdTime.. 12:09:49
     UpdUser.... *NONE*       UpdDate.. 17SEP2002
    Res Version.
     Version.... 1            Release.. 1
                               ModLevel. 0
```

Figure 19. SERDEFE View—Security Resource Definition Detail

You can use the commands described in online Help or in *Implementing Security for MAINVIEW Products* to change a definition's attributes.

Chapter 4. Analyzing DB2 Performance

This chapter describes the MAINVIEW for DB2 views that you can use to analyze DB2 performance.

See the book, *MAINVIEW for DB2 and RxD2 Getting Started*, for samples of these views and tutorials to learn how to use them.

DB2 Systems

The DB2 system views provide an enormous amount of data about how a DB2 subsystem is running. This data includes

- Many status indicators, including warning flags and utilization measurements (pools, paging, and so forth)
- All DB2 statistics fields (IFCIDs 1 and 2)
- Buffer pool statistics totals
- DDF location statistics totals
- Additional statistics on group buffer pools for data sharing

Views for DB2 system analysis are organized into several groups, as follows:

- DB2 system status views
- User activity views
- Lock views
- Pool / page set views
- EDM pool views
- Logging views
- DDF views

For each major area, there are SSI views of the most important interval statistics per DB2. Most SSI views have a hyperlink to a detail view showing all related fields as both interval and session values for the selected DB2.

Each SSI view also can be expanded to show a different time perspective, either multiple intervals per DB2, or even an earlier time period. Use the TIME command to retrieve the historical data. You can use the command, INCLUDE TIME, to display a column showing the time; EXCLUDE TIME removes it from the display.

You can easily access all the views for DB2 systems analysis from the DB2 Status Easy Menu (EZDSTAT), shown in Figure 20.

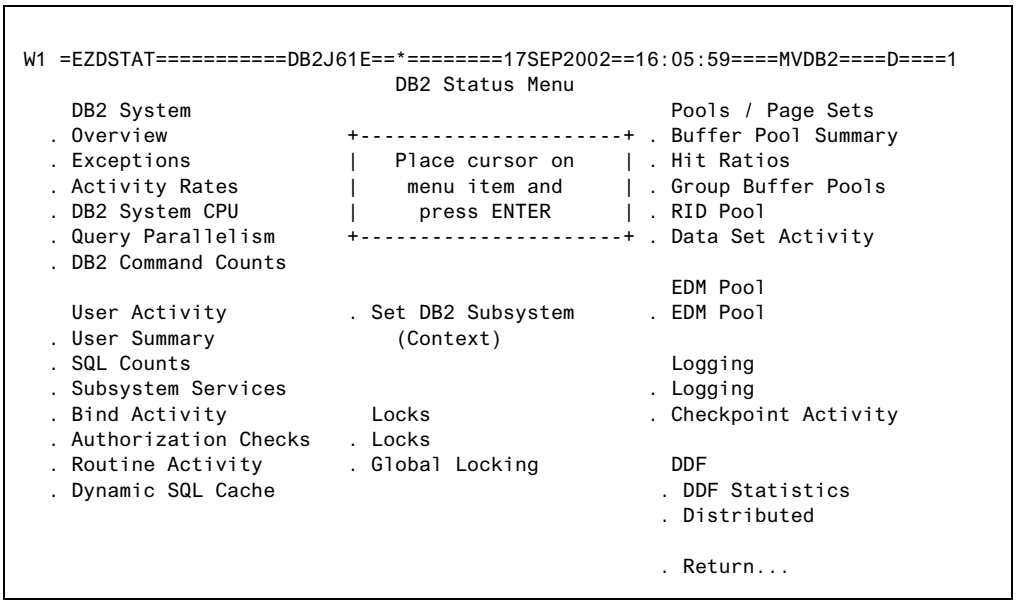

Figure 20. EZDSTAT Easy Menu—DB2 Status

There is also an Easy Menu, EZDSTATD, which provides similar options when looking at just one DB2. EZDSTAT hyperlinks generally go to tabular views that show one row per DB2 in the current context. EZDSTATD hyperlinks go directly to the detail views for that DB2.

Table 1 lists all the views available for DB2 systems.

Table 1. DB2 System Views

View Name	Group / Type	Description
STAGENT	User Activity Tabular	Agent Services Provides statistics about agent services in the current interval.
STAGENTD	User Activity Detail	Agent Services Detail Provides statistics about agent services for each of these periods: • current recording interval • current session since DB2 was started
STAUTH	User Activity Tabular	Authorization Checks Provides statistics about authorization checks for PLANs, packages, and user-defined function or stored procedure routines.
STAUTHD	User Activity Detail	Authorization Checks Detail Provides statistics about authorization checks for PLANs, packages, and user-defined function or stored procedure routines for each of these periods: • current recording interval • current session since DB2 was started
STBFRPL	Pool / Page Set Tabular	Buffer Pool Statistics Provides statistics about all defined buffer pools per DB2 in the current interval. You can use this view to analyze total buffer pool activity in all pools combined. See “Buffer Pools” on page 49 for views on individual pools.
STBFRPLD	Pool / Page Set Detail	Buffer Pool Statistics Detail Provides statistics about all buffer pools in the selected DB2 for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze total buffer pool activity.
STBIND	User Activity Tabular	Bind Statistics Provides statistics about binds in the current interval.
STBINDD	User Activity Detail	Bind Statistics Detail Provides statistics about binds for each of these periods: • current recording interval • current session since DB2 was started

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STCHKP	Logging Tabular	Checkpoint Data Provides statistics about checkpoint activity in the current interval. It also includes data capture statistics.
STCHKPD	Logging Detail	Checkpoint Data Detail Provides statistics about checkpoint activity and data capture for each of these periods: • current recording interval • current session since DB2 was started
STCMDS	System Status Tabular	DB2 Commands Provides statistics about DB2 commands executed in the current interval.
STCMDSD	System Status Detail	DB2 Commands Detail Provides statistics about DB2 commands executed for each of these periods: • current recording interval • current session since DB2 was started
STDB2	System Status Tabular	DB2 Activity Overview SSI overview of the status of all DB2 subsystems in the context. For each DB2, it displays activity rates, number of exceptions, and warning flags. You can use this view to check the level of activity per DB2 and quickly determine if exceptions are outstanding.
STDB2D	System Status Detail	DB2 Status Detail—Interval Shows the overall status and activity within the selected DB2 subsystem for the current recording interval. You can use this view to see information concerning key indicators that apply to the entire subsystem, such as active users, threads by type, DB2 CPU usage, locking, paging, and buffer and Environmental Data Manager (EDM) pool activity and status. Exception conditions detected by the background Exception Sampler or active MVDB2 monitors are also shown. This information provides an overall view of DB2 system activity and shows problems within DB2 that can be diagnosed with MVDB2 facilities.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STDB2DS	System Status Detail	DB2 Status Detail—Session Shows the overall status and activity within the selected DB2 subsystem for the current session since DB2 was started. You can use this view to see information concerning key indicators that apply to the entire subsystem, such as active users, threads by type, DB2 CPU usage, locking, paging, and buffer and Environmental Data Manager (EDM) pool activity and status. Exception conditions detected by the background Exception Sampler or active MVDB2 monitors are also shown. This information provides an overall view of DB2 system activity and shows problems within DB2 that can be diagnosed with MVDB2 facilities.
STDB2SYS	System Status Tabular	DB2 System Information Provides DB2 system information on CPU utilization in the current interval. You can use this view to compare the CPU usage per DB2 address space.
STDBSYSD	System Status Detail	DB2 System Information Detail Provides DB2 system information for each of these periods: • current recording interval • current session since DB2 was started You can use this view to see CPU usage for all DB2 address spaces. Some additional diagnostic fields are included.
STDDF	DDF Tabular	DDF Statistics Provides statistics about total DDF activity for the current interval. You can use this view to analyze the total distributed requests sent and received per DB2.
STDDFD	DDF Detail	DDF Statistics Detail Provides statistics about total DDF activity for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze the total distributed requests sent and received per DB2.
STDIST	DDF Tabular	DBAT Statistics Provides statistics about Database Access Threads (DBATs) for the current interval. You can use this view to analyze thread usage for distributed requests where this DB2 was acting as the server.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STDISTD	DDF Detail	DBAT Statistics Detail Provides statistics about DBATs for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze thread usage for distributed requests where this DB2 was acting as the server.
STDSA	Pool / Page Set Tabular	Data Set Activity Provides statistics about data set activity in the current interval. You can use this view to analyze open/close activity.
STDSAD	Pool / Page Set Detail	Data Set Activity Detail Provides statistics about data set activity for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze open/close activity.
STEDMP	EDM Pool Tabular	EDM Pool Statistics Provides statistics about the EDM pool in the current interval. You can use this view to analyze EDM pool utilization and performance.
STEDMPD	EDM Pool Detail	EDM Pool Statistics Detail Provides statistics about the EDM pool for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze EDM pool utilization and performance.
STEXC	System Status Tabular	Exception Conditions Provides an overview of exception conditions. You can use this view to see in more detail which types of exceptions might be outstanding per DB2. Hyperlinks lead to more detail for each kind of exception.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STGBFRPD	Pool / Page Set Detail	Global Buffer Pool Statistics Detail Provides statistics about group buffer pools for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze activity in the group buffer pools for one data sharing member in all pools combined. See "Buffer Pools" on page 49 for views per individual buffer pool.
STGBFRPL	Pool / Page Set Tabular	Global Buffer Pool Statistics Provides statistics about group buffer pools in the current interval. You can use this view to analyze total global activity in the group buffer pools for data sharing in all pools combined. See "Buffer Pools" on page 49 for views per individual buffer pool.
STGBGRPD	Pool / Page Set Detail	Global Buffer Pool Group Statistics Detail Provides statistics about group buffer pools for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze total global activity in the group buffer pools for data sharing in all pools and all DB2 members combined. See "Buffer Pools" on page 49 for views per individual buffer pool.
STGBLLK	Lock Tabular	Global Locking Provides statistics about global locking in the current interval. You can use this view to analyze global locking activity and the level of global contention.
STGBLLKD	Lock Detail	Global Locking Detail Provides statistics about global locking for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze global locking activity and the level of global contention.
STHITR	Pool / Page Set Tabular	Hit Ratios Provides statistics about hit ratios in the current interval. You can use this view to analyze buffer pool performance. The values used in the calculations are included in the view.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STHITRD	Pool / Page Set Detail	Hit Ratios Detail Provides statistics about hit ratios for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze buffer pool performance. The values used in the calculations are included in the view.
STLOCK	Lock Tabular	Lock Statistics Provides statistics about locks in the current interval. You can use this view to analyze lock activity and the amount of contention.
STLOCKD	Lock Detail	Lock Statistics Detail Provides statistics about locks for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze lock activity and the amount of contention.
STLOG	Logging Tabular	Log Statistics Provides statistics about logging in the current interval. You can use this view to analyze activity on the active and archive logs and the BSDS. Problems such as unavailable buffers for logging, or reads from archive logs for backouts can be detected.
STLOGD	Logging Detail	Log Statistics Detail Provides statistics about logging for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze activity on the active and archive logs and the BSDS. Problems such as unavailable buffers for logging, or reads from archive logs for backouts can be detected.
STQPAR	System Status Tabular	Query Parallelism Provides statistics about query parallelism in the current interval. You can use this view to identify how often query parallelism is being used.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STQPARD	System Status Detail	Query Parallelism Detail Provides statistics about query parallelism for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze parallelism activity on one DB2.
STRATE	System Status Detail	Activity Rates Provides the most critical measurements as quantities and rates per second, per thread, and per commit. You can use this view to analyze activity in one DB2 for both the current interval and since that DB2 started. The rate calculations give you values that make it easier to compare current activity with the totals accumulated over a longer time span.
STRID	Pool / Page Set Tabular	RID Pool Statistics Provides statistics about the RID pool per DB2 for the current interval. You can use this view to analyze RID pool usage and failures.
STRIDD	Pool / Page Set Detail	RID Pool Statistics Detail Provides statistics about the RID pool for one DB2 for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze RID pool usage and failures.
STROUT	User Activity Tabular	Routine Statistics Provides statistics about cascading, stored procedure, trigger, and user-defined function routines.
STROUTD	User Activity Detail	Routine Statistics Detail Provides statistics about cascading, stored procedure, trigger, and user-defined function routines for each of these periods: • current recording interval • current session since DB2 was started
STSERV	User Activity Tabular	Subsystem Services Provides statistics about subsystem services.

Table 1. DB2 System Views (Continued)

View Name	Group / Type	Description
STSERVD	User Activity Detail	Subsystem Services Detail Provides statistics about subsystem services for each of these periods: • current recording interval • current session since DB2 was started
STSQL	User Activity Tabular	SQL Counts Provides statistics about SQL counts in the current interval. You can use this view to see what type of SQL activity is occurring.
STSQLD	User Activity Detail	SQL Counts Detail Provides statistics about SQL counts for each of these periods: • current recording interval • current session since DB2 was started You can use this view to see what types of SQL activity are occurring.
STSYS	System Status Tabular	Establish CATALOG MANAGER Local DB2 Displays a list of DB2 subsystems by system. If you have installed CATALOG MANAGER, you can use this view to establish a DB2 local to your MAINVIEW user session in the CATALOG MANAGER profile. This is required so that other hyperlinks in data views can be made with location instead of the DB2 SSID. This allows connection to a remote DB2 to be made through DDF.
STUSUMM	User Activity Tabular	User Summary Provides summary statistics about current user connections. You can use this view to determine the current level of activity per DB2.
STUSUMMD	User Activity Detail	User Summary Detail Provides summary statistics about each type of user connection.
STWARN	System Status Detail	Warning/Error Conditions Provides information about the most important key indicators of failures or degradation. You can use this view to see all the warning indicators that are set to Yes.

Note: The statistics views STCACHE and STCACHED on the dyanmic SQL cache are included in “Dynamic SQL Cache” on page 81.

Buffer Pools

Views for buffer pool analysis are organized into two groups:

- Local buffer pool views (virtual pools and hiperpools)
- Global buffer pool views (group buffer pools for data sharing)

You can easily access all the views for buffer pool analysis from the DB2 Buffer Pool Easy Menu (EZDBFRPL), as shown in Figure 21.

```
W1 =EZDBFRPL==========DB2GMV54=*========17SEP2002==10:39:45====MVDB2====D====1
                            DB2 Buffer Pool Menu
   Local Pools                                        Global Pools
 . Overview                +----------------------+   . Group CF Status
 . Activity Rates          |   Place cursor on    |   . Group CF Activity
                           |    menu item and     |
   Tools And Menus         |     press ENTER      |   . Read Activity
 . Set Context             +----------------------+   . Write Activity
                                                      . Castout Activity
 . Return...                                          . Coupling Facility
                                                      . P-Lock Activity
```

Figure 21. EZDBFRPL Easy Menu—DB2 Buffer Pools

Table 2 lists all the views available for buffer pools.

Table 2. Buffer Pool Views

View Name	Group / Type	Description
BFRPL	Local Pools Tabular	Buffer Pool Statistics—SSI Provides an overview of buffer pool activity in the current interval. It can be invoked for one DB2 or in SSI mode for multiple DB2s; for example, a data sharing group to see member activity. You can use this view to review total buffer allocation and usage per pool. You can select any buffer pool to see further details.
BFRPLD	Local Pools Detail	Local Buffer Pool Statistics Detail Provides threshold settings and detailed local buffer pool statistics for each of these periods: • current recording interval • current session since DB2 was started You can use this view to analyze activity and threshold settings for an individual buffer pool. Both virtual pool and hiperpool information is included.
BFRPLH	Local Pools Tabular	Buffer Pool Rates—SSI Provides an overview of hit ratios and the most critical buffer pool activity measurements as rates per second in the current interval. It can be invoked for one DB2 or in SSI mode for multiple DB2s; for example, a data sharing group to see member activity. You can use this view to compare the most important indicators of buffer pool performance for all pools.
BFRPLHD	Local Pools Detail	Buffer Pool Rates Detail Provides the most critical measurements for the selected buffer pool as hit ratios and rates per second for each of these periods: • current recording interval • current session since DB2 was started You can use this view to determine overall activity since DB2 started and whether the current interval shows a significant deviation.
GBPACTD	Global Pools Detail	Group Buffer Pool Activity Detail Provides all statistics about a single group buffer pool for one DB2 member for each of these periods: • current recording interval • current session since DB2 was started You can use this view to see group buffer pool total activity details (reads, writes, castouts, coupling facility data) for one member and pool.

Table 2. Buffer Pool Views (Continued)

View Name	Group / Type	Description
GBPCASTM	Global Pools Tabular	Group Buffer Pool Castout Activity Provides statistics about castout activity per pool for each DB2 member currently connected to it. You can use this view to analyze group buffer pool castout activity for each DB2 member.
GBPCASTZ	Global Pools Summary	Group Buffer Pool Castout Activity Summary Provides statistics about castout activity. It is a summary of activity from each DB2 data sharing member currently connected to one or more pools. You can use this view to analyze group buffer pool castout activity from the viewpoint of the DB2 members. It shows all castout-related counts.
GBPCFM	Global Pools Tabular	Group Buffer Pool Coupling Facility Activity Provides statistics about coupling facility activity per pool for each DB2 member currently connected to it. You can use this view to analyze group buffer pool coupling facility activity for each DB2 member.
GBPCFZ	Global Pools Summary	Group Buffer Pool Coupling Facility Summary Provides statistics about the coupling facility. It is a summary of activity from each DB2 data sharing member currently connected to one or more pools. You can use this view to analyze group buffer pool coupling facility activity from the viewpoint of the DB2 members. It shows coupling facility activity and failure counts.
GBPGACD	Global Pools Detail	Group Buffer Pool Group Coupling Facility Activity Detail Provides statistics about group buffer pool activity for each of these periods: • current recording interval • current session since DB2 was started You can use this view to view all available activity counts for a single group buffer pool from a global coupling facility viewpoint.
GBPGACZ	Global Pools Summary	Group Buffer Pool Group Coupling Facility Activity Provides statistics about group buffer pool activity. You can use this view to analyze the activity in all group buffer pools from a global coupling facility viewpoint.

Table 2. Buffer Pool Views (Continued)

View Name	Group / Type	Description
GBPGSTD	Global Pools Detail	Group Buffer Pool Group Coupling Facility Status Detail Provides statistics about group buffer pool status for each of these periods: • current recording interval • current session since DB2 was started You can use this view to view the group buffer pool definitions, current usage, and a few measurements of reclaim activity from a global coupling facility viewpoint.
GBPGSTZ	Global Pools Summary	Group Buffer Pool Group Coupling Facility Status Provides statistics about group buffer pool status. You can use this view to analyze the status of all active group buffer pools from a global coupling facility viewpoint. It also shows how many DB2 members are currently connected to each pool.
GBPLOCKM	Global Pools Tabular	Group Buffer Pool P-Lock Activity Provides statistics about group buffer pool P-Lock activity per pool for each DB2 member currently connected to it. You can use this view to analyze group buffer pool P-Lock activity for each DB2 member.
GBPLOCKZ	Global Pools Summary	Group Buffer Pool P-Lock Activity Summary Provides statistics about group buffer pool P-Lock activity. It is a summary of activity from each DB2 data sharing member currently connected to one or more pools. You can use this view to analyze group buffer pool P-Lock activity from the viewpoint of the DB2 members.
GBPREADM	Global Pools Tabular	Group Buffer Pool Read Activity Provides statistics about group buffer pool read activity per pool for each DB2 member currently connected to it. You can use this view to analyze group buffer pool read activity for each DB2 member.

Table 2. Buffer Pool Views (Continued)

View Name	Group / Type	Description
GBPREADZ	Global Pools Summary	Group Buffer Pool Read Activity Summary Provides statistics about group buffer pool read activity. It is a summary of activity from each DB2 data sharing member currently connected to one or more pools. You can use this view to analyze group buffer pool read activity from the viewpoint of the DB2 members. It shows synchronous and asynchronous reads caused either by buffer invalidation or because the pages were not in the local pool.
GBPWRITM	Global Pools Tabular	Group Buffer Pool Write Activity Provides statistics about group buffer pool write activity per pool for each DB2 member currently connected to it. You can use this view to analyze group buffer pool write activity for each DB2 member.
GBPWRITZ	Global Pools Summary	Group Buffer Pool Write Activity Summary Provides statistics about group buffer pool write activity. It is a summary of activity from each DB2 data sharing member currently connected to one or more pools. You can use this view to analyze group buffer pool write activity from the viewpoint of the DB2 members. It shows synchronous and asynchronous writes for changed and clean pages as well as failures due to a lack of storage or write engines.

Page Sets

Views for page set analysis are organized into three groups:

- Page set status views
- Page set summary views
- I/O by page set views

One page set record is created for each open data set. These records provide all the available data set-related information, including the DB2 I/O counts and wait times, buffer pool cache counts, and status information.

Historical data is available for a more detailed analysis. In addition, using SSI mode with these views is very valuable for data sharing, because it allows you to see total group I/O counts per shared data set, which would otherwise be split across multiple DB2s.

You can easily access all the views for page set analysis from the Page Set Easy Menu (EZDPS), shown in Figure 22.

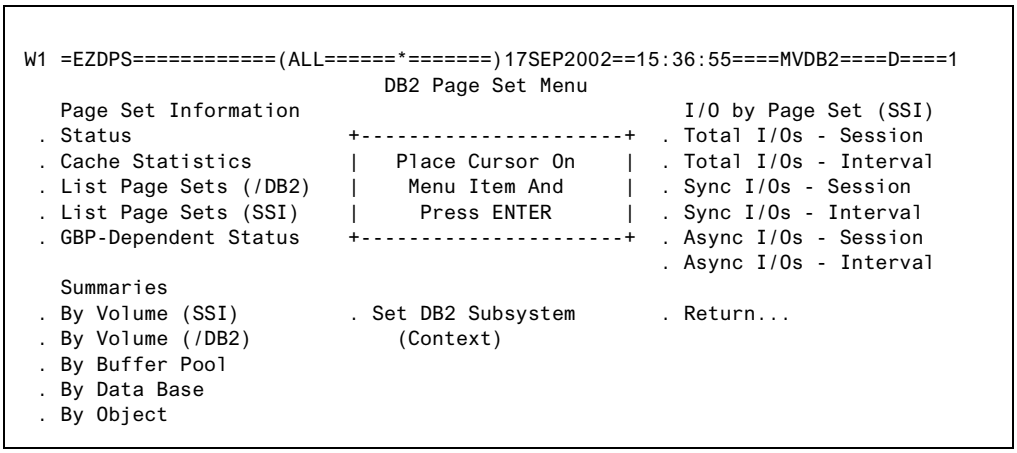

Figure 22. EZDPS Easy Menu—DB2 Page Sets

Table 3 lists all the views available for page sets.

Table 3. Page Set Views

View Name	Group / Type	Description
PSAIO	I/O by Page Set Tabular	Asynchronous I/O Page Set Member Detail—Interval Shows asynchronous I/O activity per page set in the last interval. You can use this view to analyze the amount of I/O activity per page set and DB2 from one DB2.
PSAIOS	I/O by Page Set Tabular	Asynchronous I/O Page Set Member Detail—Session Shows asynchronous I/O activity per page set since DB2 startup. You can use this view to analyze the amount of I/O activity per page set and DB2 and identify I/O response time problems.
PSAIOSZ	I/O by Page Set Summary	Asynchronous I/O Page Set Summary—Session Shows asynchronous I/O activity per page set since DB2 startup. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to analyze the amount of I/O activity per page set and identify I/O response time problems.
PSAIOZ	I/O by Page Set Summary	Asynchronous I/O Page Set Summary—Interval Shows asynchronous I/O activity per page set in the last interval. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to see the current I/O workload and response times.
PSBPGBPZ	Status Summary	Buffer Pool Page Set GBP-DEP Summary Summarizes group buffer pool dependent page sets and inter-DB2 interest by buffer pool and target. You can use this view when analyzing the amount of interaction within a data sharing group.
PSBPS	Summary Tabular	Buffer Pool Page Sets—Session Lists the page sets for a selected buffer pool. You can use this view to help determine whether the access characteristics of the page set are similar and fit with the buffer pool thresholds. Scroll right to see additional data such as synchronous or asynchronous I/O.

Table 3. Page Set Views (Continued)

View Name	Group / Type	Description
PSBPSZ	Summary Summary	Buffer Pool Page Set Summary—Session Summarizes buffer cache statistics and I/O activity by buffer pool and DB2. You can use this view when analyzing buffer pool usage and threshold and size specifications. When in SSI mode for a data sharing group, you can identify which DB2 members are causing the most activity per buffer pool.
PSBPTMZ	Summary Summary	Buffer Pool Page Set 2-Hour Summary Shows buffer pool activity for the last 2 hours. It is usually invoked by a hyperlink to select a specific buffer pool and DB2 target.
PSCACHE	Status Tabular	Page Set Cache Lists all open page sets with cache statistics. You can use this view to determine virtual pool and hiperpool (scroll right) usage per page set.
PSDBSZ	Summary Summary	Database Page Set Summary—Session Summarizes page set activity by database and DB2 target. You can use this view to evaluate I/O and cache information per database.
PSDBTMZ	Summary Summary	Database Page Set 2-Hour Summary Shows database activity for the last 2 hours. It is usually invoked by a hyperlink to select a specific database and target.
PSDTL	Status Detail	Page Set Detail Presents full data about the selected page set.
PSGBP	Status Tabular	Page Set GBP-DEP Status Shows which page sets are group buffer pool dependent and the local and remote inter-DB2 interest. You can use this view when analyzing the amount of interaction within a data sharing group.
PSLIST	Status Tabular	Page Set List Lists all open page sets, with all data elements provided per DB2 target (scroll right). You can use this view as the destination for various selective hyperlinks from summary views and to customize page set views.
PSLISTTZ	Status Summary	Page Set 2-Hour Summary Shows activity for the selected page set for the last 2 hours. Additional I/O and cache information is available (scroll right). You can use this view to evaluate page set usage patterns over time.

Table 3. Page Set Views (Continued)

View Name	Group / Type	Description
PSLISTZ	Status Summary	Page Set List (SSI) Lists all open page sets, with all data elements provided (scroll right), summarized by page set across multiple members in a data sharing group in SSI mode. You can use this view as the destination for various selective hyperlinks from summary views and to customize SSI page set views.
PSOBSZ	Summary Summary	Object Page Set Summary—Session Summarizes page set activity by database object and DB2 target. You can use this view to evaluate I/O and cache information per database object.
PSOBTMZ	Summary Summary	Object Page Set 2-Hour Summary Shows database object activity for the last 2 hours. It is usually invoked by a hyperlink to select a specific database object and target.
PSSIO	I/O by Page Set Tabular	Synchronous I/O Page Set Member Detail—Interval Shows synchronous I/O activity per page set in the last interval. You can use this view to analyze the amount of I/O activity per page set and DB2 from one DB2.
PSSIOS	I/O by Page Set Tabular	Synchronous I/O Page Set Member Detail—Session Shows synchronous I/O activity per page set since DB2 startup. You can use this view to analyze the amount of I/O activity per page set and DB2 and identify I/O response time problems.
PSSIOSZ	I/O by Page Set Summary	Synchronous I/O Page Set Summary—Session Shows synchronous I/O activity per page set since DB2 startup. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to analyze the amount of I/O activity per page set and identify I/O response time problems.
PSSIOZ	I/O by Page Set Summary	Synchronous I/O Page Set Summary—Interval Shows synchronous I/O activity per page set in the last interval. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to see the current I/O workload and response times.

Table 3. Page Set Views (Continued)

View Name	Group / Type	Description
PSSTAT	Status Tabular	Page Set Status Lists all open page sets (table spaces, partitions, index spaces) with current status information. You can use this view to identify size, data set utilization, and the number of extents, as well as the number of current users and pages on the deferred write queue. Hyperlinks provide more detailed status information.
PSTIO	I/O by Page Set Tabular	Total I/O Page Set Member Detail—Interval Shows total I/O activity per page set in the last interval. You can use this view to analyze the amount of I/O activity per page set and DB2 from one DB2.
PSTIOS	I/O by Page Set Tabular	Total I/O Page Set Member Detail—Session Shows total I/O activity per page set since DB2 startup. You can use this view to analyze the amount of I/O activity per page set and DB2 and identify I/O response time problems.
PSTIOSZ	I/O by Page Set Summary	Total I/O Page Set Summary—Session Shows total I/O activity per page set since DB2 startup. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to analyze the amount of I/O activity per page set and identify I/O response time problems.
PSTIOZ	I/O by Page Set Summary	Total I/O Page Set Summary—Interval Shows total I/O activity per page set in the last interval. If in SSI mode, data from multiple DB2 data sharing members is combined. You can use this view to see the current I/O workload and response times.
PSVOLPS	Summary Tabular	Volume Page Sets Shows I/O activity by volume and page set per DB2. You can use this view to analyze activity per page set on a volume.
PSVOLPSZ	Summary Summary	Volume Page Sets (SSI) Summarizes I/O activity by volume and page sets in SSI mode. You can use this view to analyze total activity per page set within a data sharing group.

Table 3. Page Set Views (Continued)

View Name	Group / Type	Description
PSVOLSSI	Summary Summary	Volume I/O SSI Summary—Session Summarizes I/O activity by volume across multiple DB2 targets in SSI mode. This data is especially valuable for a data sharing group to analyze total I/O.
PSVOLSZ	Summary Summary	Volume I/O Summary—Session Summarizes I/O activity by volume and DB2. You can use this view to analyze workload and I/O response time.
PSVOLTMZ	Summary Summary	Volume I/O 2-Hour Summary Shows volume I/O activity over the last 2 hours. It is usually invoked by a hyperlink to select the volume.

Threads

Views for thread analysis are organized into two groups:

- Thread summary views
- Thread detail views

One thread record is created for each active thread. These records provide the most important indicators of current thread activity.

Using SSI mode with these views allows the threads from multiple DB2s to be shown together in one display. This ability is especially important in a sysplex where incoming work can be processed in any of several different systems and it can be difficult to locate a particular user.

You can easily access all the views for thread analysis from the DB2 Threads Easy Menu (EZDTHD), shown in Figure 23.

```
W1 =EZDTHD============DB2K=====*========17SEP2002==17:36:11====MVDB2====D====1
                          DB2 Threads Easy Menu
  Threads Overview                                  Thread Summaries
. Current Threads        +----------------------+ . Attach Summary
. All Connected Threads  |   Place cursor on    | . Connect Summary
. Thread List (Customize |    menu item and     | . Plan Summary
. Threads in Warning     |     press ENTER      | . Users Summary
                         +----------------------+ . DB2 Summary
                                                  . Parallelism Summary
  Threads by Connection
. All CICS Threads       . CICS/DB2 Connections     Tools And Menus
. CICS Protected Threads                          . Set SSI Context
. All IMS Threads                                 > Easy Menu
. All Utility Threads                             > MAIN Menu
. DBAT and RRSAF Thds                             > Tuning Wizards
. SAP Threads                                     . Return...
```

Figure 23. EZDTHD Easy Menu—DB2 Threads

Table 4 lists all the views available for threads.

Table 4. Thread Views

View Name	Group / Type	Description
THDACTD	Detail Tabular	All Active Threads Displays information about each active thread. This view is similar to the THDACTV view, except for the displayable format of the CPU Time and Elapsed Time fields. In THDACTD, these fields can show the time for Database Active Threads (DBATs) in increments of less than 1/100 of a second.
THDACTV	Detail Tabular	All Active Threads Displays information about each active thread.
THDALL	Detail Tabular	All Connected Threads Displays information about each connected thread.
THDCICPR	Detail Tabular	CICS Protected Thread Averages Displays information about CICS protected threads. You can use this view to see average counts and times across the multiple CICS transactions executed under a single protected thread.
THDCICS	Detail Tabular	All CICS Threads Displays information about all CICS threads by connection. You can use this view when you want to focus only on the active CICS threads.
THDCONNZ	Summary Summary	Thread Summary by Connection Summarizes current thread activity by connection name. You can use this view to see an overview of current activity by the source of each workload, such as CICS, IMS, batch, or TSO connections. In SSI mode, it shows the total workload in the defined context. This information can be especially valuable in a data sharing sysplex.
THDCTYPZ	Summary Summary	Thread Summary by Connection Type Summarizes current thread activity by connection type. You can use this view to see an overview of current activity by attach type, such as CICS, TSO, IMS-MPP, or IMS-BMP. In SSI mode, it shows the total workload in the defined context. This information can be especially valuable in a data sharing sysplex.

Table 4. Thread Views (Continued)

View Name	Group / Type	Description
THDDB2Z	Summary Summary	Thread Summary by DB2 ID Summarizes current thread activity by the target DB2 subsystem ID. You can use this view to see an overview of current activity for each DB2 in the defined context.
THDDBAT	Detail Tabular	All Data Base Access Threads Displays information about each active distributed thread.
THDDETL	Detail Detail	Thread Detail Shows detailed information about the selected user. You can use this view to view all collected information for a thread. Additional information is available through alternative hyperlinks to the DUSER display. If the MAINVIEW for DB2 Data Collector is active, a hyperlink is also available to access Explain information for active SQL.
THDIMS	Detail Tabular	All IMS Threads Displays information about all IMS threads by connection. You can use this view when you want to focus only on the active IMS threads.
THDLIST	Detail Tabular	All Active Threads—Long Form Displays information about each active thread. You can use this view to customize one or more views with exactly the data that you want to see for your workloads.
THDPLANZ	Summary Summary	Thread Summary by Plan Name Summarizes current thread activity by plan name. You can use this view to see an overview of current activity by application. In SSI mode, it shows the total workload in the defined context. This information can be especially valuable in a data sharing sysplex.
THDPRLLD	Detail Tabular	Parallel Query Detail Shows each active task of a parallel query. You can use this view to understand the total scope of a parallel query. In a data sharing group context, it shows all parallel tasks running in multiple DB2 members with sysplex query parallelism.

Table 4. Thread Views (Continued)

View Name	Group / Type	Description
THDPRLLZ	Summary Summary	Summary of Parallel Queries Summarizes all queries that have invoked the parallel processing feature. You can use this view to see an overview of all parallel queries currently active in the defined context. In a data sharing group, it includes all parallel tasks running with sysplex query parallelism.
THDRRS	Detail Tabular	All RRSAF Threads Displays information about the RRSAF threads for each remote location. You can use this view when you want to focus only on the active RRSAF threads.
THDSAP	Detail Tabular	All Active DB2 SAP Threads Displays active threads with the DB2 workstation ID fields formatted as SAP identifiers, such as the application server and process ID. You can use this view to relate DB2 threads to SAP requests.
THDSAPD	Detail Detail	SAP Thread Detail Displays detailed information about the selected active SAP thread. You can use this view for further analysis of a SAP thread.
THDUSERZ	Summary Summary	Thread Summary by User ID Summarizes current thread activity by user ID. You can use this view to see an overview of current activity by user ID and DB2. This data is useful mainly for sources of multiple threads like CICS or the DB2 internal threads labeled SYSOPR.
THDUTIL	Detail Tabular	Active DB2 Utility Threads Displays information about active utilities, showing phase activity.

Table 4. Thread Views (Continued)

View Name	Group / Type	Description
THDWARN	Detail Tabular	Key Indicator/Warnings Provides information about the most important key indicators of failures or degradation. You can use this view to see if the selected threads have more than one warning indicator set. A hyperlink on the Indicator Msg column shows more information about these warnings.
THDWARND	Detail Detail	Key Indicator/Warnings Detail Displays detailed information about key indicator warning messages for the selected user. You can use this view to analyze threads that have more than one warning.

System Events

Views for analysis of system event traces are organized into the following groups:

- Authorization failures
- DB2 commands
- Data set open/close events
- RID list processing and failures

These views are available only if the MAINVIEW for DB2 – Data Collector component is running. This component supports the system-wide collection of several individual DB2 IFCIDs. Tracing of these low-overhead DB2 system detail trace events is started by default.

Two AutoCustomization steps are available to activate this selectable component. See the *MAINVIEW for DB2 Customization Guide* for further instructions.

You can easily access all the views for system event analysis from the System Event Traces Easy Menu (EZDEVENT), shown in Figure 23.

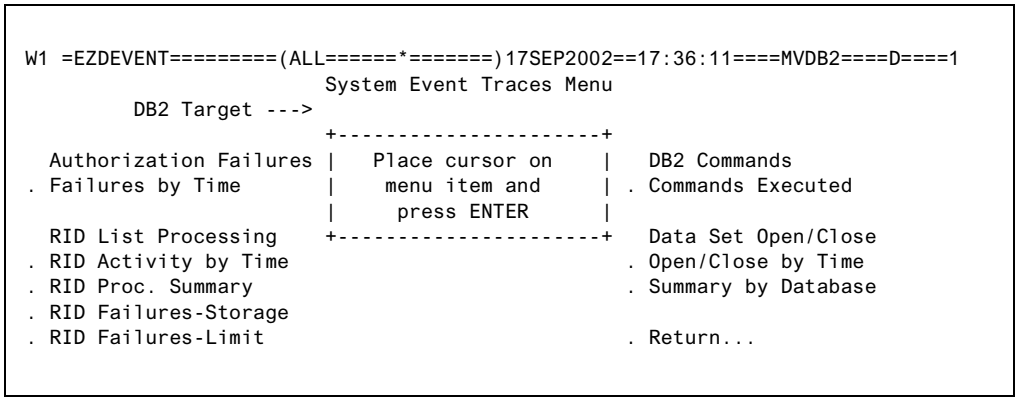

Figure 24. EZDEVENT Easy Menu—DB2 System Event Traces

Table 5 lists all the views available for system events.

Table 5. System Event Views

View Name	Group / Type	Description
AUTHFAIL	Authorization Failures Tabular	Authorization Failures Displays information about each authorization failure since DB2 started. You can use this view to analyze which users are experiencing authorization failures.
AUTHFALD	Authorization Failures Detail	Authorization Failures—Detail Shows detailed information about the selected authorization failure. You can use this view to analyze a particular authorization failure.
CMDLIST	DB2 Commands Tabular	DB2 Command History Lists each of the DB2 commands issued since DB2 started. You can use this view to see which commands were issued and by whom.
CMDTEXT	DB2 Commands Detail	DB2 Command Text Displays the text of the selected DB2 command. You can use this view to see the complete command text.
DATASETA	Data Set Opens/Closes Tabular	Data Set Opens/Closes Lists all data set Opens and Closes since DB2 started. You can use this view to analyze Open/Close activity by time.
DATASETZ	Data Set Opens/Closes Tabular Summary	Data Set Opens/Closes—Summary Summarizes data set Opens and Closes by database name. You can use this view to analyze the amount of Open/Close activity by database.
RIDEV	RID List Processing Table	RID Collection IDs Lists individual invocations of RID list processing by Collection ID, Plan Name, Package Name, and Statement Number.
RIDEVD	RID List Processing Detail	RID Details Displays detailed information about one occurrence of RID list processing.

Table 5. System Event Views (Continued)

View Name	Group / Type	Description
RIDEVZ	RID List Processing Summary	RID Summary Summarizes RID list processing by plan and package.
RIDFLLIM	RID List Processing Table	RID Failures – Limit Lists each occurrence of a RID processing failure because of an internal limit in the number of RIDs that can be processed.
RIDFLSTG	RID List Processing Table	RID Failures – Storage Lists each occurrence of a RID processing failure because of a RID pool storage shortage.
RIDLIST	RID List Processing Tabular	RID List Processing Displays information about RID list processing. You can use this view to analyze RID list processing activity.

Thread Interval History

Views for thread interval history analysis are organized into two groups:

- Thread interval history summary views
- Thread interval history detail views

The thread interval history views show short-term history, performance data, and exceptions for your DB2 workloads. They display summary data by both time and connection type. The data can be collected from either of the following sources:

- MVDB2 trace logs, such as THRDHIST, which generally cover a relatively short interval
- MAINVIEW for DB2 – Data Collector trace data sets, which could have a day or more of compressed data

You can easily access all the views for thread interval history analysis from the Thread History Trace Log List view (HTLOGS), shown in Figure 25. Hyperlink from the Number Intvls column to begin your analysis of the selected trace log.

```
>W1 =HTLOGS============DB2K=====*========25OCT2002==13:17:30====MVDB2====D====3
          End                                                 Number   Number   DB2
End Date  Time  Trace Id Type Trace Title                     Intvls  Threads Target
21MAY2002 10:05 MVDB2DC  Sum  MVDB2 DATA COLLECTOR              10    17102 DB2K
10JUL2002 15:33 DW01     Sum  DB2 APPLICATION TRACE             6     6166 DB2K
30AUG2002 09:11 THRDHIST Sum  THREAD HISTORY                   15    25422 DB2K
10SEP2002 17:39 THRDHIST Sum  THREAD HISTORY                    9    14906 DB2K
```

Figure 25. HTLOGS View—Thread History Trace Log List

A hyperlink on the number of threads allows you to drill down to see the detailed thread data, either in Data Collector reports or in MVDB2 trace displays. For the Data Collector reports, there is also a hyperlink on Trace ID that allows you to qualify the detailed data before viewing it.

Note: If you have very large active trace logs with high thread volumes, it is recommended that you use interval filtering to to select what you really need to see. This reduces the amount of data to be processed, speeds the return of the data, makes it easier to analyze, and avoids possible storage problems.

See the “Analyzing the DB2Workload” section of the *MAINVIEW for DB2 and RxD2 Getting Started* book for examples of this feature.

Table 6 lists all the views available for thread interval history.

Table 6. Thread Interval History Views

View Name	Group / Type	Description
HTLOGS	Detail Tabular	Thread History Trace Log List Displays information about all available sources of thread accounting history. This data includes each trace log data set (TLDS), as well as data from the MAINVIEW for DB2 – Data Collector active logs, selected by date. You can use this view to review the sources of thread history data and select one for workload summary analysis by hour, interval, or connection type, or drill down to detail thread accounting data.
HTCTYPI	Detail Tabular	Thread Connect Type by Interval Displays thread data for the selected connection type for all recorded intervals. You can use this view to determine when the selected connection type was experiencing problems.
HTCTYPZ	Summary Tabular Summary	Thread Summary by Connect Types Summarizes thread processing by connection type. You can use this view to determine which connection types were experiencing problems. You can sort by any of the columns to look for exceptions. A hyperlink from the Connect Type column displays the interval data for the selected connection type.
HTDTLZ	Summary Detail Summary	Thread Interval Summary History Displays a detailed summary of all the thread data on the selected thread history source. This data can consist of a trace log data set (TLDS) or data from the MAINVIEW for DB2 – Data Collector active logs, selected by date. You can use this view to get an overview of your DB2 workload for the selected time frame. It shows a thread summary, elapsed and CPU time analysis, key activity indicators (as totals, averages, and maximums), and a detailed breakdown of thread exceptions. It provides hyperlinks for further analysis by hour, interval, or connection type.
HTHOURZ	Summary Tabular Summary	Thread History by Hour Summarizes thread processing by hour. You can use this view to identify when workload processing problems or thread exceptions have occurred, and which connection types were affected. You can sort it by any of the columns to look for particular problems like high class 3 wait times or too many exceptions. Hyperlinks are provided to see a breakdown by interval and connection type.

Table 6. Thread Interval History Views (Continued)

View Name	Group / Type	Description
HTINTVL	Detail Tabular	Thread History by Interval Displays thread history data for each 15-minute interval by connection type. You can use this view to identify when workload processing problems or thread exceptions have occurred, and which connection types were affected. You can sort it by any of the columns to look for particular problems like high class 3 wait times or too many exceptions.
HTINTVLC	Detail Tabular	Thread Interval by Connect Types Displays thread data for the selected interval by connection type. You can use this view to determine which connection types were experiencing problems during a selected interval.
HTINTVLD	Detail Detail	Thread Interval Detail Displays detailed information about the selected interval and connection type. You can use this view to see an elapsed and CPU time analysis, activity counts (as totals, averages, maximums, and rates), and detailed exception counts.
HTINTVLZ	Summary Tabular Summary	Thread Summary by Interval Start Summarizes thread history data by interval. You can use this view to identify when workload processing problems or thread exceptions have occurred, and which connection types were affected. You can sort it by any of the columns to look for particular problems like high class 3 wait times or too many exceptions. A hyperlink is provided to see a breakdown by connection type.
HTLIST	Detail Tabular	Thread Interval History Displays thread history data for each interval by connection type. This view is similiar to HTINTVL except it contains all available data elements. You can easily customize this view to see only the data that you want or to display the columns in a different order. See *Using MAINVIEW* for instructions on customizing views.
HTXCEPT	Detail Detail	Thread Interval Exceptions Displays all recorded exception counts for the selected interval and connection type. You can use this view to see what problems occurred during the interval for the connection type.

Workloads

Views for workload analysis are grouped into a single category:

- Workload objective views

The workload objective views show the response or elapsed time performance of DB2 transactions that occur within workloads defined as part of a MAINVIEW for DB2 workload. Workloads are ranked according to the percentage of transactions that are completed in less time than the response time objective defined for the workload.

You can use these views to see how well MAINVIEW for DB2 workloads are meeting their defined response time objectives.

Table 7 lists all the views available for workloads.

Table 7. Workload Views

View Name	Group / Type	Description
DOBJ	Objective Tabular	Objectives Review—Interval Shows a workload's transaction performance for each target DB2 subsystem for the current interval.
DOBJR	Objective Tabular	Objectives Review—Real Time Shows a workload's transaction performance for each target DB2 subsystem for the current real time period.
DOBJRZ	Objective Summary	Objective Summary—Real Time Summarizes workload performance across all DB2 subsystems in the current context for the current real time period.
DOBJS	Objective Tabular	Objectives Review—Session Shows a workload's transaction performance for each target DB2 subsystem for the current session since DB2 was started.
DOBJSZ	Objective Summary	Objective Summary—Session Summarizes workload performance across all DB2 subsystems in the current context for the current session since DB2 was started.
DOBJZ	Objective Summary	Objective Summary—Interval Summarizes workload performance across all DB2 subsystems in the current context for the current interval.

Lockouts

Views for lock contention analysis that are based on timeout and deadlock events are organized into these groups:

- Lockout event views
- Resource conflict views
- Involved thread views (victims, blockers, waiters)

Lockout records are created for each resource involved in a lockout (usually just one for a timeout, but two or more for a deadlock). This information enables views by resource, blocker, and waiter, not just the lockout events and the victim identifiers. Each record is marked as having the victim as the waiter or blocker, or only containing participants in a deadlock. Lockout event-related views select only those records where the victim is the waiter, whereas resource or waiter/blocker views select all records.

MAINVIEW for DB2 automatically captures the DB2 IFCIDs 172 (deadlocks) and 196 (timeouts) to collect this data. The records are written to history as they occur and can be retrieved by TIME period. If no TIME is specified, the latest events still in the active LKOUT buffer (default of 100) are shown. The default can be adjusted with the LOCKOUTS parameter in the DMRBEX00 BBPARM member.

Note: Instead of *holder*, the term *blocker* is used, since a priority waiter or a retained lock can also block a resource and cause lockouts.

You can easily access all the views for lock analysis from the DB2 Locking Easy Menu (EZDLOCK), shown in Figure 26.

```
W1 =EZDLOCK===========DB2K=====*========17SEP2002==17:36:11====MVDB2====D====1
                             DB2 Locking Menu
         DB2 Target ---> DB2K
  Currently Held Locks   +----------------------+   Lock Statistics
. Locks Held by Threads  |   Place cursor on    | . Lock Counts-One DB2
. Thrds Suspended-Locks  |    menu item and     | . Lock Counts-Data Shar.
. Contention by Object   |     press ENTER      |
. All Locks Held-Object  +----------------------+

  Lockouts - One DB2       < Lockout analysis >     Lockouts-Data Sharing
. Lockout Events by Time . Resource Cont. Summary . Lockout Events by Time
. Blocker/Waiter Summary . Conntype Cont. Summary . Blocker/Waiter Summary
                         . Blocker Summary
  Contention Analysis    . Waiter Summary
. Lock Wizard Dialog                             . Return...
```

Figure 26. EZDLOCK Easy Menu—DB2 Locking

Table 8 lists all the views available for lockouts.

Table 8. Lockout Views

View Name	Group / Type	Description
LKBLOCK	Thread Detail	Lockout Blocker Plan Detail Lists all conflicts by blocker plan and time stamp. You can use this view to identify all specific conflicts caused by a plan over time.
LKBLOCKZ	Thread Summary	Lockout Blocker Plan Summary Summarizes conflicts by blocker IDs. You can use this view to analyze plans and users causing lockouts.
LKBWZ	Thread Summary	Lockout Blocker/Waiter Summary Lists a summary of blocker/waiter plans. You can use this view to identify conflicting plans.
LKBWZSSI	Thread Summary	Lockout Global Blocker/Waiter Summary Lists a summary of blocker/waiter plans and systems. You can use this view to identify conflicting plans across multiple data sharing DB2 members.
LKCONZ	Thread Summary	Lockout Connection Summary Lists a summary of lockout victims by connection type. You can use this view to identify scheduling problems with incompatible workloads (for example, IMS/CICS transactions blocked by batch).
LKEVD	Event Detail	Lockout Event Resource Detail Provides full data about the selected resource conflict.
LKEVENT	Event Tabular	Lockout Events Lists the latest timeout (IFCID 196) or deadlock (IFCID 172) events that have occurred in this DB2.
LKEVRES	Event Tabular	Lockout Event Resources Lists each resource involved in the selected lockout.
LKEVSSI	Event Tabular	Global Lockout Events Lists lockout events within a data sharing group.

Table 8. Lockout Views (Continued)

View Name	Group / Type	Description
LKPRINT	Event Tabular	Lockout Event Report LKPRINT is designed to show all lockout contentions in a format suitable for export to a data set for printing or downloading in CSV format to a spreadsheet (EXPORT command), or for printing in a batch job (MV BATCH). It is over 133 characters in length, so you may want to customize it to hide unneeded fields, or use the alternate view LKPR133. Lockout events that involve two or more resource contentions, such as deadlocks (and some timeouts), are represented with multiple rows. The victim threads, whose SQL requests were terminated, are identified by the rows with a non-blank “Victim Authid” and a “W/B Flag” (Waiter/Blocker) value of “W”.
LKPR133	Event Tabular	Lockout Event Report (Len=133) LKPR133 is designed to show all lockout contentions in a format suitable for export to a data set for printing or downloading in CSV format to a spreadsheet (EXPORT command), or for printing in a batch job (MV BATCH). Several fields have been shortened or hidden to fit a print length of 133 characters. If you want to customize a view yourself, it is preferable to start from alternate view LKPRINT. Lockout events that involve two or more resource contentions, such as deadlocks (and some timeouts), are represented with multiple rows. The victim threads, whose SQL requests were terminated, are identified by the rows with a non-blank “Victim Authid” and a “W/B Flag” (Waiter/Blocker) value of “W”.
LKRESD	Event Tabular	Lockout Resource Conflict Detail Lists each occurrence by time of any lockout where the selected resource (database/table space or specific page) was involved. You can use this view to identify all plans involved in conflicts on this resource and help identify potential application scheduling problems.
LKRESNRZ	Resource Summary	Lockout Resource Number Summary Lists each page/row involved in any conflict, usually for a selected resource (database/table space) from LKRESZ. You can use this view to see the hot spots in a table by identifying the pages that were hit.
LKRESZ	Resource Summary	Lockout Resource Summary Lists each resource (database/table space) involved in any conflict. You can use this view to see which table spaces cause the most conflicts.

Table 8. Lockout Views (Continued)

View Name	Group / Type	Description
LKWAIT	Thread Detail	Lockout Waiter Plan Detail Lists all conflicts by waiter plan and time stamp. You can use this view to identify all specific conflicts over time where a plan was a waiter.
LKWAITZ	Thread Summary	Lockout Waiter Plan Summary Lists conflicts by waiter IDs. You can use this view to analyze plans and users suffering most from lockouts.

ZPARM Installation Parameters

Views for ZPARM installation parameter analysis are organized into the following groups:

- DB2 System
- Locking
- Logging
- Distributed
- Storage and Data Sets
- Authorization
- Application-Related

You can easily access all the views for installation parameter analysis from the DB2 ZPARM Easy Menu (EZDZPARM), as shown in Figure 27.

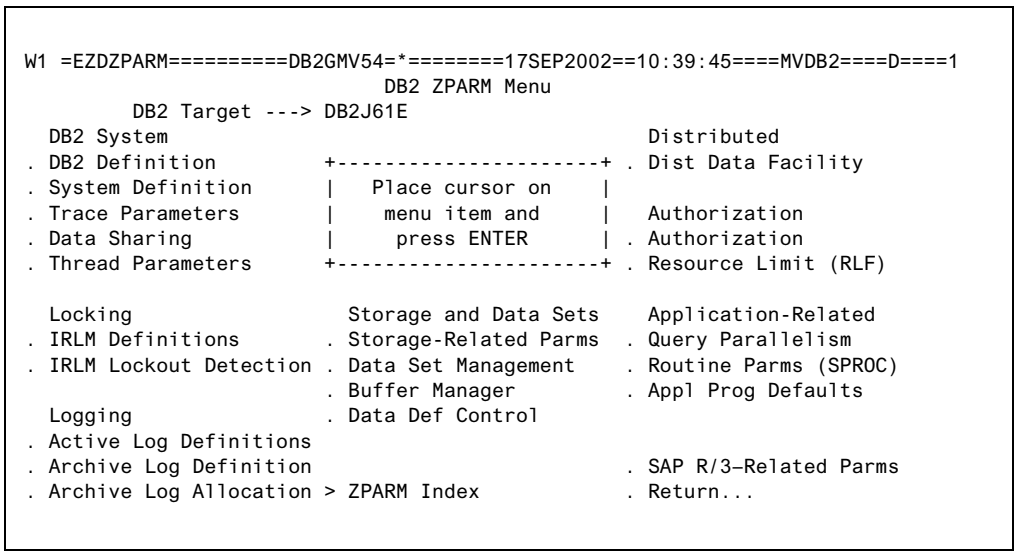

Figure 27. EZDZPARM Easy Menu—DB2 Installation Parameters

An index view provides an alphabetic list of all ZPARM names with hyperlinks to the view where they are displayed.

Many of the ZPARM views also provide hyperlinks to related statistics views or tuning wizards to simplify analysis of the effects of various parameters on DB2 performance. You can click on the following buttons when they are displayed on the right side of a view:

- WIZARD button to access a DB2 tuning wizard that leads you through all the related information about the selected area of DB2 performance
- STATS button to see related statistics for each of these periods:
  - current recording interval
  - current session since DB2 was started

You can also click on the NEXT and PREV buttons to easily browse through several or all of the ZPARM views.

Installation parameters highlighted in green (the default color for fields with a defined action) can be modified by overtyping the value, provided you have

- The appropriate authorization
- The BMC Software OPERTUNE for DB2 product installed

When an action is invoked by overtyping a field, the new value is displayed after the successful completion of the OPERTUNE command. The command and the resulting messages are written to the Journal Log. If the command was not successful, ERR appears at the top left of the view and provides a direct hyperlink to display the error messages.

For more information about these commands, see the *OPERTUNE for DB2 Reference Manual*.

Table 9 lists all the views available for analyzing installation parameters.

Table 9. Installation Parameter Views

View Name	Group/Type	Description
ZPARCALD	Logging Detail	Archive Log Allocation Definitions Shows the installation parameter settings for • Archive Log Allocation Definitions
ZPARCDFD	Logging Detail	Archive Log Definitions Shows the installation parameter settings for • Archive Log Read Parameters • Archive Log Definitions
ZPAUTHD	Authorization Detail	Authorization Shows the installation parameter settings for • Authorization Definitions • Authorization Cache Sizes • DDF-Related Authorization
ZPBFMGRD	Storage and Data Sets Detail	Buffer Manager Shows the installation parameter settings for • Buffer Manager—Default Pools • Buffer Manager—Data Sharing Castout • Buffer Manager—Internal Work Elements
ZPDB2D	DB2 System Detail	DB2 Definition Shows the installation parameter settings for • DB2 Definition

Table 9. Installation Parameter Views (Continued)

View Name	Group/Type	Description
ZPDDFD	Distribution Detail	DDF—Distributed Data Facility Shows the installation parameter settings for • DDF—Distributed Data Facility Definitions • DBAT Thread Controls • DDF-Related Authorization
ZPDDLCTD	Storage and Data Sets Detail	Data Definition Control Shows the installation parameter settings for • Data Definition Control
ZPDSETD	Storage and Data Sets Detail	Data Set Management Shows the installation parameter settings for • Data Set Management
ZPDSHRD	DB2 System Detail	Data Sharing Shows the installation parameter settings for • Data Sharing • Sysplex Query Parallelism
ZPHDECPD	Application-Related Detail	DSNHDECP—Application Programming Defaults Shows the installation parameter settings for • DSNHDECP—Application Programming Defaults
ZPIRLMDD	Locking Detail	IRLM Definitions Shows the installation parameter settings for • IRLM Definitions
ZPIRLMLD	Locking Detail	IRLM—Lockout Detection Shows the installation parameter settings for • IRLM—Timeout/Deadlock Detectioin • IRLM—Application Lock Usage
ZPLOGD	Logging Detail	Active Log Definitions Shows the installation parameter settings for • Active Log Definitions • Active Log Write Parameters

Table 9. Installation Parameter Views (Continued)

View Name	Group/Type	Description
ZPQPARD	Application-Related Detail	Query Parallelism Shows the installation parameter settings for • Query Parallelism • Sysplex Query Parallelism
ZPRLFD	Authorization Detail	Resource Limit Facility (RLF) Shows the installation parameter settings for • Resource Limit Facility (RLF)
ZPROUTD	Application-Related Detail	Routine Parameters (Stored Procedures/UDFs) Shows the installation parameter settings for • Stored Procedures • User-Defined Functions
ZPSAPD	Application-Related Detail	SAP R/3–Related Parameters Shows the installation parameter settings for • Parameters with Required Settings for SAP R/3 • Parameters with Recommended Settings for SAP R/3
ZPSTGD	Storage and Data Sets Detail	Storage-Related Parameters Shows the installation parameter settings for • Storage-Related Parameters • Sort Pool • RID Pool • LOB Storage • Miscellaneous Storage • Reserved DBM1 Storage • Trace Storage
ZPSYSD	DB2 System Detail	System Definitions Shows the installation parameter settings for • System Definitions • Data Propagation

Table 9. Installation Parameter Views (Continued)

View Name	Group/Type	Description
ZPTHDD	DB2 System Detail	Thread Parameters Shows the installation parameter settings for • Thread Parameters • DDF DBATs • Automatic Bind • Dynamic SQL Caching • Miscellaneous Thread Parameters
ZPTRACED	DB2 System Detail	Trace Parameters Shows the installation parameter settings for • Trace Parameters

Dynamic SQL Cache

Views for analysis of the dynamic SQL cache are organized into two groups:

- Dynamic SQL cache statistics views
- Dynamic SQL statement views

You can easily access all the views for dynamic SQL cache analysis from the Dynamic SQL Cache Menu (WZCACHE), as shown in Figure 28.

```
W1 =WZCACHE===========DB2K=====*========17SEP2002==11:17:24====MVDB2==== ====1
    Dynamic SQL Cache Menu...

    Quick Statistics......... Interval    Session
     Pages Used..............       20
     Inserts.................        0        4.0
     Global Cache Hit ratio..      0.0       44.4
     Local Cache Hit ratio...      0.0        0.0

   . All Statistics..........

   . Statement Summary.......

    SQL Statement List Views.
   . SQL Identifiers.........
   . SQL Execution Statistics
   . SQL Wait Time Totals....
   . SQL List (To Customize).

   Statement Filters.........
   . Set/Clear Filters.......
```

Figure 28. WZCACHE—Dynamic SQL Cache Menu

WZCACHE provides a few key statistics about the dynamic SQL cache usage and performance for each of these periods:

- current recording interval
- current session since DB2 was started

You can hyperlink from this menu to see the complete statistics about the dynamic SQL cache as well as several statement-related views.

The statement-related views will show you whether statistics are being collected at the statement level.

If you want to activate these statistics, issue the following DB2 command:

```
-START TRACE(MON) IFCID(318)
```

Make note of the TNO trace number that is returned in the message from DB2.

Stop the statistics gathering with this DB2 command:

```
-MODIFY TRACE(MON) IFCID(318) TNO(nn)
```

Table 10 lists all the views available for dynamic SQL cache.

Table 10. Dynamic SQL Cache Views

View Name	Group / Type	Description
SCFTOTZ	Statement Detail Summary	Dynamic SQL Cache Filter Results Summarizes the number of statements selected and provides hyperlinks to each of the statement-related tabular views. It gives you a choice of which tabular view of the selected statements that you want to see.
SCLIST	Statement Tabular	SQL Cache Statement Elements List Is provided to make it easy for you to create a customized view of all the elements about the SQL statements in the cache that you want to see in each of the following categories: • SQL Identifiers • SQL Execution Statistics • SQL Wait Time Totals
SCSETF	Statement Detail	SQL Cache Statement Filters Allows you to specify filters to determine which SQL statements are returned. Once set, they remain in effect for your session until cleared. **Note:** It is recommended that you specify these filters to select only those statements that you want, because the size of the internal buffer might limit the number of statements that can be returned for an unfiltered request.
SCSQL	Statement Tabular	SQL Cache Statement List Lists the SQL statements in the cache with the available identifiers, current usage, and the first part of the SQL text.
SCSQLD	Statement Detail	SQL Cache Statement Detail Provides the complete information available about a selected SQL statement, including identifiers, execution statistics, and wait time totals.
SCSTATS	Statement Tabular	SQL Cache Statement Statistics Is a tabular list of all the statements in the cache showing the collected statistics.
SCSTMTD	Statement Tabular	SQL Cache Statement Text Shows the complete SQL statement text for a selected statement.
SCWAITS	Statement Tabular	SQL Cache Statement Waits Shows the available wait time totals per statement.

Table 10. Dynamic SQL Cache Views (Continued)

View Name	Group / Type	Description
STCACHE	Cache Statistics Tabular	Dynamic SQL Cache Statistics Provides an overview of the current usage of the cache, whether in the EDM pool or the SQL cache data space. It then provides all the DB2 statistics concerning both global and local cache usage, including hit ratios.
STCACHED	Cache Statistics Detail	Dynamic SQL Cache Statistics Detail Provides an overview of the current usage of the cache, whether in the EDM pool or the SQL cache data space, for each of these periods: • current recording interval • current session since DB2 was started

Monitors

From the MAINVIEW for DB2 windows environment, you can view the DB2 Workload and Resource Monitor services described in Volume 2 of the *MAINVIEW for DB2 User Guide*. These services are timer-driven monitors that measure DB2 workload and resources over time as requested by a user. A set of monitors is generally activated automatically per DB2 target.

The windows-mode views described in this section present the monitor data either for a single DB2 target or for multiple targets in an SSI context. They are organized into the following groups:

- Monitor summary views, which show you how many monitors are active and how many have exceeded their warning thresholds:

  DMON Summary by target

  DMAREAZ Summary by target and monitor area

  DSOVER Summary by monitor type across multiple targets in an SSI context

- Monitor detail views, which list individual monitors:

  DSERV Lists each active monitor

  DMWARN Lists each active monitor whose threshold has been exceeded

- Plot views, which show the data collected by a single monitor.

Table 11 lists all the views available for monitors.

Table 11. Monitor Views

View Name	Group / Type	Description
DMAREAZ	Summary Summary	Monitor Summary by Area—Interval Summarizes the monitors by target and monitor area and shows their status. It summarizes performance by the number of monitors that have exceeded their warning threshold and the average percent of the warning value.
DMON	Summary Summary	Monitors by Target—Interval Summarizes the monitors by target for the current interval. It shows how many of those have exceeded their warning thresholds and the average percent of warning. Avg % Warning measures how close the reported data is to the warning threshold set for each monitor.
DMONC	Summary Summary	Monitors by Target—Cluster Summarizes the monitors by target for the current interval, for the current real time period, and for the current session since DB2 was started. It shows how many of those have exceeded their warning thresholds and the average percent of warning. Avg % Warning measures how close the reported data is to the warning threshold set for each monitor.
DMONR	Summary Summary	Monitors by Target—Real Time Summarizes the monitors by target for the current real time period. It shows how many of those have exceeded their warning thresholds and the average percent of warning. Avg % Warning measures how close the reported data is to the warning threshold set for each monitor.
DMONS	Summary Summary	Monitors by Target—Session Summarizes the monitors by target for the current session since DB2 was started. It shows how many of those have exceeded their warning thresholds and the average percent of warning. Avg % Warning measures how close the reported data is to the warning threshold set for each monitor.
DMWARN	Detail Tabular	Monitors in Warning—Real Time Lists each active monitor whose threshold has been exceeded for the current real time period. It shows how many monitors are in warning and the defined threshold and current measured value for each monitor.

Table 11. Monitor Views (Continued)

View Name	Group / Type	Description
DSERV	Detail Tabular	Monitor Overview—Interval Lists each active monitor for the current interval. Monitors are ranked according to their average percentage of warning threshold.
DSERVC	Detail Tabular	Monitor Overview—Cluster Lists each active monitor for the current interval, for the current real time period, and for the current session since DB2 was started. Monitors are ranked according to their average percentage of warning threshold.
DSERVR	Detail Tabular	Monitor Overview—Real Time Lists each active monitor for the current real time period. Monitors are ranked according to their average percentage of warning threshold.
DSERVS	Detail Tabular	Monitor Overview—Session Lists each active monitor for the current session since DB2 was started. Monitors are ranked according to their average percentage of warning threshold.
DSOVER	Summary Summary	Monitors by Type—Interval Summarizes the monitors by type (service and parameter) across multiple targets in an SSI context for the current interval. In an SSI context, data from similar monitors across multiple targets is combined and then ranked according to the average percentage of warning threshold. Average percentage of warning measures how close the reported data is to the warning threshold set for the monitor that collects the data.
DSOVERC	Summary Summary	Monitors by Type—Cluster Summarizes the monitors by type (service and parameter) across multiple targets in an SSI context for the current interval, for the current real time period, and for the current session since DB2 was started. In an SSI context, data from similar monitors across multiple targets is combined and then ranked according to the average percentage of warning threshold. Average percentage of warning measures how close the reported data is to the warning threshold set for the monitor that collects the data.

Table 11. Monitor Views (Continued)

View Name	Group / Type	Description
DSOVERR	Summary Summary	Monitors by Type—Real Time Summarizes the monitors by type (service and parameter) across multiple targets in an SSI context for the current real time period. In an SSI context, data from similar monitors across multiple targets is combined and then ranked according to the average percentage of warning threshold. Average percentage of warning measures how close the reported data is to the warning threshold set for the monitor that collects the data.
DSOVERS	Summary Summary	Monitors by Type—Session Summarizes the monitors by type (service and parameter) across multiple targets in an SSI context for the current session since DB2 was started. In an SSI context, data from similar monitors across multiple targets is combined and then ranked according to the average percentage of warning threshold. Average percentage of warning measures how close the reported data is to the warning threshold set for the monitor that collects the data.
Plot Views	Plot Detail	Display the data collected by one monitor. See “Plot Views” on page 89 for a description of each of the plot views.

Plot Views

When you select a monitor from DSERV or DMWARN, a view showing a plot of the data collected by that monitor is displayed, as shown in Figure 29.

```
>W1 =DCONUT============DB2G=====*========17SEP2002===18:00:13====MVDB2====D====1
   >>STDB2D  |.....|......|  % Util   Parm..... BATCH
   18:00:00  *                  6.00 Warning..    80.00
   17:59:00                     0.00 Max/Min..  Maximum
   17:58:00                     0.00  Value...     6.00
   17:57:00                     0.00  Time.... 18:00:00
   17:56:00                     0.00 Graph Max    80.00
   17:55:00                     0.00 Target... DB2G
   17:54:00                     0.00 Descript. CONNECTION % UTILIZATION
   17:53:00                     0.00
   17:52:00                     0.00 Samples..        1
   17:51:00                     0.00 Period... 00:10:00
            |.....|......|  % Util   Samp Int. 00:01:00
   Total    *                  6.00 Start.... 18:00:00
   Prev Pd                     0.00 Elapsed.. 00:00:00
   Curr Pd                     0.00
```

Figure 29. Plot View

Each plot provided by a monitor has a hyperlink to a corresponding MVDB2 service that you can use for detail analysis of your target's performance. The hyperlink is indicated by >> in the upper left portion of the view. In the preceding example, it is >>STDB2D. This hyperlink accesses the DB2 Status Detail—Interval view. When you make this hyperlink, you have access to all the related windows-mode views provided by MAINVIEW for DB2.

This section lists the monitor plot views for the DB2 workload and resource monitor services described in Volume 2 of the *MAINVIEW for DB2 User Guide*. The descriptions are in tabular form and categorized by DB2 area. Each table shows the plot view and its corresponding monitor and describes the performance data provided.

DB2 Resource Monitors

This section describes the views and monitors that provide performance plot displays about DB2:

- General DB2 system activity
- User activity
- Lock activity
- EDM pool activity
- Buffer pool activity
- Log activity
- OS/390 services
- DDF activity

General DB2 System Monitors (Area = DSYS)

The monitors listed in Table 12 measure general DB2 system activity and status.

Table 12. General DB2 System Monitors

View Name	Monitor	Description
DDSOPN	DSOPN	Reports the number of open DB2 database data sets during the sampling period.
DDSOPR	DSOPR	Reports the number of successful open requests for database data sets by buffer pool during the sampling period. If a large number of databases are specified to open automatically at DB2 startup, a measurement spike occurs at startup.
DDSUTL	DSUTL	Reports the percentage of the maximum number of concurrently accessible DB2 database data sets (DSNZPARM value DSMAX) that are open during the specified time interval.

User Activity Monitors (Area = USER)

The monitors listed in Table 13 measure user activity.

Table 13. User Activity Monitors

View Name	Monitor	Description
DBINDF	BINDF	Reports the number of attempted automatic binds that failed during the sampling period.
DBINDS	BINDS	Reports the number of automatic binds that were completed successfully during the sampling period.
DBNPKF	BNPKF	Reports the number of failed automatic bind requests for packages during the sampling period. The reported value is the difference between the total automatic bind requests for packages minus the successful requests (QTAUTOBA).
DBNPKS	BNPKS	Reports the number of successful automatic bind requests for packages during the sampling period (QTPKABND).

Table 13. User Activity Monitors (Continued)

View Name	Monitor	Description
DCOMP2	COMP2	Reports the number of successful phase 2 commit requests during the sampling period. A two-phase commit is used by both IMS and CICS transactions.
DCOMRO	COMRO	Reports the number of read-only commit requests during the sampling period. A read-only commit is a one-phase commit used by IMS and CICS in query-only processing.
DCOMSY	COMSY	Reports the number of synchronized commit requests during the sampling period. A synchronized commit is used by TSO applications, the Call Attach Facility, and batch applications.
DCONUT	CONUT	Reports the percentage of active connections of the total allowable during the specified sampling period. The total allowable connections are defined by the following members in the DSNZPARM data set: IDFORE TSO foreground (QMF or DB2I) IDBACK TSO background (batch jobs, CAF, or utilities) MAXBAT When CONUT is started without parameters, all active connections are monitored. The percentage is reported as the sum of active connections of the total.
DDBTQD	DBTQD	Reports the number of times a database access thread was queued because the number of concurrent remote threads was already at a maximum (QDSTQDBT).
DDROWA	DROWA	Reports the number of attempts to use Direct Row Access to locate a record during the sampling period (QXROIMAT, QXROIIDX, QXROITS) with one of the following results: USED DB2 used Direct Row Access to locate a record FAILIX DB2 attempted to use Direct Row Access but reverted to using an index to locate a record FAILTS DB2 attempted to use Direct Row Access but reverted to using a table space scan to locate a record FAILURES Direct Row Access attempts failed If the DROWA monitor is started without parameters (blank), the reported number is the sum of all Direct Row Access attempts during the sampling period. (DB2 Release 6.1 and later)
DEOMFL	EOMFL	Reports the number of end-of-memory (EOM) failures during the sampling period. The count is incremented when an end-of-memory request is processed for a DB2-connected address space; for example, at TSO force.

Table 13. User Activity Monitors (Continued)

View Name	Monitor	Description
DEOTFL	EOTFL	Reports the number of end-of-task (EOT) failures during the sampling period. The count is incremented when an end-of-task request is processed for a DB2-connected address space; for example, an abend of IMS or CICS tasks that have a DB2 thread.
DLOBMX	LOBMX	Reports the maximum storage used for LOB values, in megabytes, during the sampling period (QXSTLOBV). (DB2 Release 6.1 and later)
DNESTM	NESTM	Reports the maximum level of nested SQL cascading due to triggers, user-defined functions, and stored procedures during the sampling period (QXCASCDP). (DB2 Release 6.1 and later)
DPLBND	PLBND	Reports the number of successfully bound plans during the sampling period (QTPLNBD).
DPKBND	PKBND	Reports the number of successfully bound packages during the sampling period (QTPKGBD).
DPRLG	PRLG	Reports the number of parallel groups that executed to the planned parallel degree (QXNORGRP), which executed to a degree less than planned because of a storage shortage or contention on the buffer pool (QXREDGRP), or the total number of parallel groups executed (QXTOTGRP).
DPRLF	PRLF	Reports the number of planned parallel groups that fall back to sequential execution during the sampling period (QXDEGCUR, QXDEGESA, QXDEGBUF, QXDEGENC) for one of the following reasons: CURSOR — Fall back to sequential because of ambiguous cursor (can be used for update or delete) NOSORT — Fall back to sequential because of lack of ESA Sort support NOBFR — Fall back to sequential because of storage shortage or buffer pool contention NOENCLAV — Fall back to sequential because OS/390/ESA enclave services were unavailable If the PRLF monitor is started without parameters (blank), the reported number is the sum of all fallbacks to sequential processing for any reason.

Table 13. User Activity Monitors (Continued)

View Name	Monitor	Description
DPRLSF	PRLSF	Reports the number of sysplex query failures during the sampling period (QXCOORNO, QXISORR, QXXCSKIP) for one of the following reasons: COORNO Failed because coordinator changed to NO ISORR Failed because of ISOLATION RR/RS CSKIP Skipped a DB2 because of buffer shortage (DB2 Release 5.1 and later)
DRSQLS	RSQLS	Reports the number of SQL statements sent to a remote site to be executed on behalf of a user at a local site (QLSTSQLS). If the RSQLS monitor is started without parameters (blank), the reported number is the sum of SQL statements sent to all remote sites.
DRSQLR	RSQLR	Reports the number of SQL statements received from a remote site to be executed locally on behalf of a remote user (QLSTSQLR). If the RSQLR monitor is started without parameters (blank), the reported number is the sum of SQL statements received from all remote sites.
DSQLAC	SQLAC	Reports the number of SQL statements that executed during the sampling period (QXSETCRL, QXCALL). DSQLAC reports the number of executed statements by the following SQL types: Data Definition Language — Authorization statements Lock statements — Select/Fetch statements Dynamic SQL — Update, insert, or delete statements Control statements — Open statements Close statements — Stored procedure calls If the SQLAC monitor is started without parameters (blank), the reported number is the sum of all SQL statement types that executed during the sampling period.

Table 13. User Activity Monitors (Continued)

View Name	Monitor	Description
DSPROC	SPROC	Reports the number of stored procedure calls for all users during the sampling period (QXCALL, QXCALLAB, QXCALLTO, QXCALLRJ). The reported value can be for one of the following types: CALLS — Number of SQL CALL statements that were executed ABENDS — Number of times a stored procedure terminated abnormally TIMEOUTS — Number of times an SQL CALL statement timed out while waiting to be scheduled REJECTS — Number of times an SQL CALL statement was rejected because the procedure was in the 'STOP ACTION(REJECT)' state If the SPROC monitor is started without parameters (blank), the reported number is the sum of all SQL CALL statements during the sampling period.
DTHDAB	THDAB	Reports the number of aborted threads during the sampling period.
DTHDAC	THDAC	Reports the number of active threads by one of the following types: TSO — Batch Utility — Call Attach Facility IMS — Database Access (DBAT) CICS — Distributed Allied Agent (DIST) Blank — Both DBAT and DIST If the THDAC monitor is started without parameters (blank), the reported number is the sum of active threads of all sampled types.
DTHDCR	THDCR	Reports the number of successful CREATE THREAD requests during the sampling period.
DTHDID	THDID	Reports the number of in doubt threads during the sampling period. Only IMS or CICS threads can be in doubt.
DTHDQD	THDQD	Reports the number of queued threads by one of the following types: TSO — Batch Utility — Call Attach Facility IMS — CICS If the THDQD monitor is started without parameters (blank), the reported number is the sum of queued threads of all sampled types.
DTHDUT	THDUT	Reports the percentage of active threads from the total allowable during the sampling period. Allowable threads are defined in member CTHREAD of the DSNZPARM data set.
DTHDWT	THDWT	Reports the number of CREATE THREAD requests that waited for an available thread during the sampling period.

Table 13. User Activity Monitors (Continued)

View Name	Monitor	Description
DTRIGR	TRIGR	Reports the number of triggered actions during the sampling period (QXSTTRG, QXROWTRG, QXTRGERR). The reported value can be for one of the following types: STMT — Number of times a statement trigger was activated ROW — Number of times a row trigger was activated ERROR — Number of times an SQL error occurred during execution of a triggered action If the TRIGR monitor is started without parameters (blank), the reported number is the sum of all activated triggers during the sampling period. (DB2 Release 6.1 and later)
DUDF	UDF	Reports the number of user-defined functions during the sampling period (QXCAUD, QXCAUDAB, QXCAUDTO, QXCAUDRJ). The reported value can be for one of the following types: EXECS — Number of user-defined functions executed ABENDS — Number of times a user-defined function terminated abnormally TIMEOUTS — Number of times a user-defined function timed out while waiting to be scheduled REJECTS — Number of times a user-defined function was rejected FAILURES — Number of user-defined finctions that failed If the UDF monitor is started without parameters (blank), the reported number is the sum of all user-defined functions during the sampling period. (DB2 Release 6.1 and later)

Lock Monitors (Area = LOCK)

The monitors listed in Table 14 measure locking activity.

Table 14. Lock Monitors

View Name	Monitor	Description
DCLM	CLM	Reports the number of claim requests during the sampling period (QTXACLNO).
DCLMF	CLMF	Reports the number of unsuccessful claim requests during the sampling period (QTXACLUN).
DDRN	DRN	Reports the number of drain requests during the sampling period (QTXADRNO).
DDRNF	DRNF	Reports the number of unsuccessful drain requests during the sampling period (QTXADRUN).
DGNEG	GNEG	Reports the number of times this DB2 was driven to negotiate a P-Lock or the number of P-Lock change requests (QTGSPPPE, QTGSPGPE, QTGSCHNP, QTGSOTPE).
DGNOEN	GNOEN	Reports the number of times an engine is not available for a P-Lock exit or a notify exit request (QTGSPEQW).
DGNTFM	GNTFM	Reports the number of notify messages sent or received (QTGSNTFY, QTGSNTFR).
DGPLK	GPLK	Reports the number of P-Lock lock, change, and unlock requests (QTGSLPLK, QTGSCPLK, QTGSUPLK).
DGSUSP	GSUSP	Reports the number of suspends or global lock or change requests denied (QTGSIGLO, QTGSSGLO, QTGSFLSE, QTGSDRTA).
DGXES	GXES	Reports the number of both L-Lock and P-Lock lock, change, and unlock requests propagated to OS/390 XES synchronously (QTGSLSLM, QTGSCSLM, QTGSUSLM, QTGSKIDS).
DILREQ	ILREQ	Reports the number of requests to the IMS resource lock manager during the sampling period by one of the following types: Query — Change Other — All requests to the IRLM address space
DIXLOK	IXLOK	Reports the number of index space locks during the sampling period. An index space lock can be one of the following types: Shared — Shared index space locks that include SHARE, INTENT SHARE, and SHARE with INTENT EXCLUSIVE Exclusive — Exclusive index space locks that include UPDATE, INTENT EXCLUSIVE, and EXCLUSIVE If the IXLOK monitor is started without parameters (blank), the reported number is the sum of all index space locks during the sampling period.

Table 14. Lock Monitors (Continued)

View Name	Monitor	Description
DLDEAD	LDEAD	Reports the number of lock deadlock failures during the sampling period.
DLESCL	LESCL	Reports the number of lock escalations during the sampling period. A lock escalation can be one of the following types: Shared — Shared lock escalations that include SHARE, INTENT SHARE, and SHARE with INTENT EXCLUSIVE Exclusive — Exclusive lock escalations that include UPDATE, INTENT EXCLUSIVE, and EXCLUSIVE If the LESCL monitor is started without parameters (blank), the reported number is the sum of all lock escalations during the sampling period.
DLREQ	LREQ	Reports the number of lock or unlock requests during the sampling period. If the LREQ monitor is started without parameters (blank), the reported number is the sum of all lock and unlock requests during the sampling period.
DLSUSP	LSUSP	Reports the number of lock suspensions during the sampling period by one of the following types: Lock suspensions — Latch suspensions Other suspensions — All suspensions
DLTIME	LTIME	Reports the number of lock timeout failures during the sampling period.
DMXLOK	MXLOK	Reports the maximum number of locks of any kind (page, row, or table) held by a single user during the sampling period.
DPGLOK	PGLOK	Reports the number of page locks during the sampling period. A page lock can be one of the following types: Shared — Shared page locks that include SHARE, INTENT SHARE, and SHARE with INTENT EXCLUSIVE Exclusive — Exclusive page locks that include UPDATE, INTENT EXCLUSIVE, and EXCLUSIVE If the PGLOK monitor is started without parameters (blank), the reported number is the sum of all page locks during the sampling period.

Table 14. Lock Monitors (Continued)

View Name	Monitor	Description
DTSLOK	TSLOK	Reports the number of table space locks during the sampling period. A table space lock can be one of the following types: Shared — Shared table space locks that include SHARE, INTENT SHARE, and SHARE with INTENT EXCLUSIVE Exclusive — Exclusive table space locks that include UPDATE, INTENT EXCLUSIVE, and EXCLUSIVE If the TSLOK monitor is started without parameters (blank), the reported number is the sum of all table space locks during the sampling period.
DUSLOK	USLOK	Reports the number of suspended users because of lock conflicts during the sampling period. Lock conflicts are reported by the following attach types: • TSO • Batch • CICS • IMS • Utility • Call Attach Facility • Database Access (DDF servers) • Distributed Allied Agent (DDF requestors) • Both Database Access and Distributed Allied Agent • All (blank parameter)

EDM Pool Monitors (Area = EDM)

The monitors listed in Table 15 measure the EDM pool.

Table 15. EDM Pool Monitors

View Name	Monitor	Description
DEDMLD	EDMLD	Reports the average number of EDM page requests per load I/O during the sampling period by one of the following types: Cursor Table (CT) loads — Package Table (PT) loads DBD loads — All EDM page requests
DEDMDS	EDMDS	Reports the percentage of Data Space pages used by the EDM pool during the sampling period (QISEDFRE / QISEDPGE). (DB2 Release 6.1 and later)
DEDMUT	EDMUT	Reports the percentage of EDM pool pages in use during the sampling period.

Buffer Pool Monitors (Area = BUFR)

The monitors listed in Table 16 measure the buffer pools.

Table 16. Buffer Pool Monitors

View Name	Monitor	Description
DBPUSE	BPUSE	Reports the percentage of buffer pools specified as in use by a thread. The percentage usage is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DBPUTL	BPUTL	Reports the percentage of buffer pool usage. Unavailable buffer pool pages are assessed whether they are in use or being updated. The percentage usage is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools **Note:** Unavailable pages are sometimes referred to as nonstealable pages. This includes pages currently in use by a thread and those updated but not yet written to disk.
DDESRD	DESRD	Reports the number of pages for which a destructive read was requested during the sampling period.
DDWTX	DWTX	Reports the number of times that a buffer pool Vertical Deferred Write threshold was exceeded during the sampling period (QBSTDWV). When the number of updated pages for a given data set exceeds the Vertical Deferred Write threshold, deferred writes are initiated for that data set. The count of times that the Vertical Deferred Write threshold was exceeded is reported for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DG2WRF	G2WRF	Reports the number of coupling facility requests to write changed pages to the secondary group buffer pool for duplexing that failed due to a lack of storage in the coupling facility during the sampling period (QBGL2F). The count is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools (DB2 Release 6.1 and later)
DGCAST	GCAST	Reports the number of times group buffer pool castout was initiated because the class castout threshold was detected or the group buffer pool castout threshold was detected during the sampling period (QBGLCT, QBGLGT). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGCTPG	GCTPG	Reports the number of pages cast out from the group buffer pool to DASD during the sampling period (QBGLRC). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGETPG	GETPG	Reports the number of GETPAGE requests during the sampling period. The number of GETPAGE requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DGETRI	GETRI	Reports the average number of GETPAGE requests per read I/O during the sampling period. The average number of GETPAGE requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DGFAIL	GFAIL	Reports the number of times a castout engine was not available, a coupling facility write engine was not available for coupling facility writes, or coupling facility read or write requests could not be completed because of a lack of coupling facility storage resources during the sampling period (QBGLCN, QBGLSU, QBGLRF, QBGLWF). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGOTHR	GOTHR	Reports the number of other coupling facility requests that are not counted in any of the other QBGL fields during the sampling period (QBGLOS). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGPGWR	GPGWR	Reports the number of changed or clean pages written to the group buffer pool during the sampling period (QBGLSW, QBGLWC, QBGLAW, QBGLAC). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGRDIN	GRDIN	Reports the number of coupling facility read requests caused by the buffer being marked invalid or the requested page was not found in the buffer pool during the sampling period (QBGLXR, QBGLMR, QBGLAR). Data is not returned from the group buffer pool and a directory entry is created if it does not already exist. This situation means another DB2 in the group has R/W interest in the page set or partition. This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DGRDNO	GRDNO	Reports the number of coupling facility read requests caused by the buffer being marked invalid or the requested page was not found in the buffer pool during the sampling period (QBGLXN, QBGLMN, QBGLAN). Data is not returned from the group buffer pool and no directory entry is created for this page. This situation means no other DB2 in the group has R/W interest in the page set or partition. This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DGRDRQ	GRDRQ	Reports the number of coupling facility read requests with data returned during the sampling period (QBGLXD, QBGLMD, QBGLAD). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DHPRDF	HPRDF	Reports the number of read page request failures because the backing expanded store was stolen (castout=yes) or some other error occurred during the sampling period (QBSTHRF + QBSTARF). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DHPVPA	HPVPA	Reports the number of successful asynchronous page moves from the hiperpool to the virtual buffer pool during the sampling interval (QBSTHRA + QBSTARA). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DHPVPS	HPVPS	Reports the number of successful synchronous reads to move a page from a hiperpool to a virtual buffer pool during the sampling period (QBSTHRE). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DHPWRF	HPWRF	Reports the number of write page request failures because the backing expanded store was stolen (castout=yes) or some other error occurred during the sampling period (QBSTHWF + QBSTAWF). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DLSTPF	LSTPF	Reports the number of buffer pool list prefetch requests during the sampling period (QBSTLPF). If the monitor is started without a buffer pool ID, the sum of prefetch requests for all active buffer pools are reported.
DMAXPF	MAXPF	Reports the maximum number of concurrent prefetch I/O streams allocated for parallel processing queries during the sampling interval (QBSTXIS). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DMIAPF	MIAPF	Reports the number of RID list processing failures that occurred during the sampling period. List processing failures are attributed to SQL routines that Explain indicates will use multi-index access paths, but fail to do so at runtime because storage limits or RID thresholds are exceeded.
DMIGDS	MIGDS	Reports the number of data sets that migrated from a buffer pool during the sampling period. DMIGDS shows the number of migrated data sets for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DPFDIO	PFDIO	Reports the number of asynchronous read I/Os because of a dynamic prefetch during the sampling period (QBSTDIO). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFDPG	PFDPG	Reports the number of asynchronous page reads because of a dynamic prefetch during the sampling period (QBSTDPP). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFDRQ	PFDRQ	Reports the number of dynamic prefetch requests during the sampling interval (QBSTDPF). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFIOF	PFIOF	Reports the number of prefetch I/O stream request failures because of buffer storage shortages during the sampling period (QBSTJIS). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DPFLIO	PFLIO	Reports the number of asynchronous read I/Os caused by list prefetch to a buffer pool during the sampling period (QBSTLIO). The count of asynchronous read I/Os caused by a list prefetch is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFLPG	PFLPG	Reports the number of asynchronous page reads resulting from a list prefetch during the sampling period (QBSTLPP). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFLRQ	PFLRQ	Reports the number of list prefetch requests during the sampling period (QBSTLPF). The number of list prefetch requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DPFSIO	PFSIO	Reports the number of asynchronous read I/Os caused by sequential prefetch during the sampling period (QBSTPIO). The number of asynchronous read I/Os is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DPFSPG	PFSPG	Reports the number of asynchronous page reads caused by sequential prefetch during the sampling period (QBSTSPP). This count is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DPFSRQ	PFSRQ	Reports the number of sequential prefetch requests for a buffer pool during the sampling period (QBSTSEQ). The number of sequential prefetch requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DPFTIO	PFTIO	Reports the number of asynchronous read I/Os caused by prefetch during the sampling period. The count is calculated as the sum (QBSTPIO + QBSTLIO + QBSTDIO). The count of asynchronous read I/Os caused by prefetch is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFTPG	PFTPG	Reports the number of total asynchronous page reads caused by prefetch during the sampling period. The count is calculated as the sum (QBSTSPP + QBSTLPP + QBSTDPP). The count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPFTRQ	PFTRQ	Reports the number of total prefetch requests from an active buffer pool during the sampling period. The count is calculated as the sum (QBSTSEQ + QBSLTLPF + QBSTDPF). The count of total prefetch requests is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DPIO	PIO	Reports the number of prefetch read I/Os that occurred during the sampling period. The number of prefetch read I/Os are shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DPRL12	PRL12	Reports the number of times that a prefetch quantity is reduced from normal to one-half during the sampling period (QBSTPL1). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPRL14	PRL14	Reports the number of times that a prefetch quantity is reduced from one-half of normal to one-quarter during the sampling period (QBSTPL2). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPRLGF	PRLGF	Reports the number of times that a conditional GETPAGE request cannot be satisfied from a buffer pool during the sampling period (QBSTNGT). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPRLQ	PRLQ	Reports the number of parallel processing requests in the buffer pool during the sampling period (QBSTPQO). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DPRLQF	PRLQF	Reports the number of times that DB2 cannot allocate the requested number of buffer pages to allow a parallel group to run to the planned degree during the sampling period (QBSTPQF). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DPWS	PWS	Reports the number of database system pages that were written during the sampling period. The number of written database system pages is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DPWSWI	PWSWI	Reports the average number of system pages written per write I/O during the sampling period. The average number of written system pages for each write I/O is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DRIDUT	RIDUT	Reports the percentage of RID control blocks in use during the sampling period. The percentage is calculated as the number of used RID blocks divided by the total number of available RID blocks.
DRIO	RIO	Reports the number of media manager read I/O requests during the sampling period. The counts are either a GETPAGE request or a multiple page request for a prefetch function. The number of media manager read I/O requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DRTO	RTO	Shows the number of HSM recall timeouts that occurred during the sampling period. The number of HSM recall timeouts are shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DRWP	RWP	Reports the number of reads with paging during the sampling period. The reported value is the number of times a buffer did not have real-storage frame backing when being PAGEFIXed to perform a read I/O. The count is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DSEQIO	SEQIO	Reports the number of synchronous read I/Os issued by sequential access requesters in the sampling period (QBSTSIO). A synchronous read I/O occurs as a result of a disabled prefetch or when the requested pages are not consecutive. This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DSEQPG	SEQPG	Reports the number of GETPAGE requests issued by sequential access requesters during the sampling period (QBSTSGT). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DSWS	SWS	Reports the number of system updates (SWS) during the sampling period. The count increments by one each time a row in a database system page is updated. The number of system updates is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DSWSPW	SWSPW	Reports the average number of updates for each system page written during the sampling period. The average number of updates for each system page is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DWIO	WIO	Reports the number of media manager write I/O requests during the sampling period. Requests can batch-write I/O to allow multiple pages to be written per a single call to the media manager. The number of media manager write I/O requests is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools
DWKMAX	WKMAX	Reports the maximum number of work files in use during merge processing in the sampling period (QBSTWFM). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DWKNBF	WKNBF	Reports the number of work files that cannot be created because of insufficient buffer resources during the sampling period (QBSTMAX). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools

Table 16. Buffer Pool Monitors (Continued)

View Name	Monitor	Description
DWKPFZ	WKPFZ	Reports the number of work file sequential prefetches that did not occur because the dynamic prefetch quantity is zero during the sampling period (QBSTWKPD). This count is shown for the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active buffer pools
DWWP	WWP	Reports the number of writes with paging during the sampling period. The reported value is the number of times a buffer did not have real-storage frame backing when being PAGEFIXed to perform a write I/O. The count is shown for one of the following buffer pools: • BP0-BP49 • BP8K-BP8K9 • BP16K-BP16K9 • BP32K-BP32K9 • All active pools

Log Monitors (Area = LOG)

The monitors listed in Table 17 measure logging activity.

Table 17. Log Monitors

View Name	Monitor	Description
DARCDL	ARCDL	Reports the number of read accesses delayed because of unavailable resources during the sampling period.
DARCRA	ARCRA	Reports the number of read archive logs allocated during a sampling interval. Read archive logs are allocated when backout or recovery data requests cannot be satisfied from the log buffers or from the active log.
DARCTC	ARCTC	Reports the number of read accesses delayed because of tape mount contention during the sampling period.
DARCTM	ARCTM	Reports the number of look-ahead tape mount requests that occurred during the sampling period.
DARCWA	ARCWA	Reports the number of archive logs allocated as a result of an active log data set being archived during the sampling period.
DARCWR	ARCWR	Reports the number of control intervals (CIs) that are archived during the sampling period.
DBSDSA	BSDSA	Reports the number of accesses to the Bootstrap Data Set (BSDS) during the sampling period.
DCHKPT	CHKPT	Reports the number of DB2 checkpoints taken during the sampling interval.
DCKPFR	CHKPT	Reports the number of DB2 checkpoints taken during the sampling interval. The purpose of this monitor is to report that fewer than the specified number of checkpoints have occurred in the specified time interval. Suggested values to start this monitor are as follows: • An interval of 20 minutes • A value of less than 1 For example: **`INTERVAL=20:00 WVAL=<1`** In this example, the message will be issued if no checkpoints occur in a twenty-minute interval.
DLOGRD	LOGRD	Reports the number of log reads for backout or recovery during the sampling period. The number is the sum of log reads satisfied from active log buffers, log data sets, archive logs, or from other sources.
DLOGUT	LOGUT	Reports the percentage of log CIs in use during the sampling interval.
DLOGWR	LOGWR	Reports the number of log write requests during the sampling interval. The reported number of log write requests can be selected as FORCE, NOWAIT, or the total of all requests.
DLOGWT	LOGWT	Reports the number of log request waits because log buffers were unavailable during the sampling period.

OS/390 Services (Area = DMVS)

The monitors listed in Table 18 measure OS/390 activities that can affect DB2 performance.

Table 18. OS/390 Services

View Name	Monitor	Description
DCSAPG	CSAPG	Reports the total number of page requests to the common storage area (CSA) during the sampling period.

DCSAP	CSAP	Reports the percent usage of CSA during the sampling period. CSA percent usage is calculated with the following formula:
		
		`100 * [(Total CSA) - (Space described by FBQEs in CSA)]`
		`----------`
		`(Total CSA)`

DDB2DP	DB2DP	Reports the number of page-in requests for the OS/390 image or by the specified address spaces listed below: • IMS Resource Lock Manager address space • DB2 System Service address space • DB2 Database Service address space • DDF address space plus the three address spaces listed above • DDF address space only • Total page-in requests for the OS/390 image

DECSAP	ECSAP	Reports the extended CSA percent usage during the sampling interval. Extended CSA percent usage is calculated with the following formula:
		
		`100 * [(Total ECSA) - (Space described by FBQEs in ECSA)]`
		`----------`
		`(Total ECSA)`

DDF Monitors (Area = DDF)

The monitors listed in Table 19 measure activity in the DB2 Distributed Data Facility address space.

Table 19. DDF Monitors

View Name	Monitor	Description
DCNVLM	CNVLM	Reports the number of conversations that are deallocated because the ZPARM limit was reached for maximum concurrent threads during a sampling interval (QDSTQCRT).
DDBATQ	DBATQ	Reports the number of DBATs queued because the MAXDBAT limit was reached during the sampling period (QDSTQDBT, QDSTQIN2). The reported value can be for the following type: NEW — Number of times that a new Database Access Thread (DBAT) was queued because it reached the ZPARM maximum for active remote threads (QDSTQDBT) If the DBATQ monitor is started without parameters (blank), the reported value is the number of times that a new or reactivated type 2 DBAT was queued because it reached the ZPARM maximum for active remote threads during the sampling period. For DB2 Release 5.1, this value is the same as for the NEW parameter (QDSTQDBT). For DB2 Release 6.1 and above, this value indicates the number of queued receive requests for a type 2 inactive thread, plus the number of queued requests for new connections. These requests were received after the maximum number of remote active threads was reached (ZPARM MAXDBAT) (QDSTQIN2).
DDDFBS	DDFBS	Reports the total bytes sent from the monitor target to all remote locations or to specified locations during the sampling period.
DDDFBR	DDFBR	Reports the total bytes received at the monitor target location from all remote locations or from specified locations during the sampling period.
DDDFCQ	DDFCQ	Reports the number of queued conversations because the session limit has been reached for all LUs or for specified LUs during a sampling interval.
DDDFT1	DDFT1	Reports the number of connections that were terminated instead of made type 1 inactive because the maximum number of type 1 inactive threads was reached during the sampling period (QDSTNITC). (DB2 Release 6.1 and later)
DNACTC	NACTC	Reports the number of inactive database access threads during a sampling period (QDSTQCIT).
DP2CON	P2CON	Reports the number of connections with two-phase commit operations (QDSTQCIT + QDSTWSTR), cold started connections (QDSTCSTR), and warm started connections (QDSTWSTR) during a sampling interval.

Table 19. DDF Monitors (Continued)

View Name	Monitor	Description
DP2RSY	P2RSY	Reports the number of resynchronization connections attempted with all remote locations for two-phase commit operations (QDSTRSAT), successful attempts (QDSTRSSU), and unsuccessful attempts (QDSTRSAT - QDSTRSSU) during a sampling period.
DP2RMT	P2RMT	Reports the number of operations that have the remote location as the coordinator or for all remote locations during the specified time interval (QLSTINDT + QLSTCPTR + QLSTRBTR).
DP2RMI	P2RMI	Reports the number of threads that became INDOUBT that have the remote location as the coordinator or for all remote locations during the specified time interval (QLSTINDT).
DP2RMC	P2RMC	Reports the number of COMMIT operations that have the specified location as the coordinator or for all remote locations during the specified time interval (QLSTCPTR).
DP2RMR	P2RMR	Reports the number of ROLLBACK operations that have the specified locations as the coordinator or for all remote locations during the specified time interval (QLSTRBTR).

DB2 Workload Monitors

This section describes the views and monitors that provide performance plot displays about DB2 workloads.

SQL Monitors (Area = WKLD)

The monitors listed in Table 20 measure the number and type of SQL calls made.

Table 20. SQL Monitors

View Name	Monitor	Description
D#SQLD	#SQLD	Reports the number of Data Definition Language statements (CREATE, ALTER, DROP) during the sampling period (QXCRTAB + QXCRINX + QXCTABS + QXCRSYN + QXCRDAB + QXCRSTG + QXDEFVU + QXDRPIX + QXDRPTA + QXDRPTS + QXDRPDB + QXDRPSY + QXDRPST + QXDRPVU + QXALTST + QXFETCH + QXALTTS + QXALTTA + QXALTIX + QXDRPAL + QXCRALS + QXALDAB + QXDRPPKG).
D#SQLM	#SQLM	Reports the number of data manipulative SQL statements issued by a transaction (SELECT, INSERT, UPDATE, DELETE, PREPARE, OPEN, CLOSE, FETCH) during the sampling period (QXSELECT + QXFETCH + QXINSRT + QXDELET + QXUPDTE + QXOPEN + QXCLOSE + QXPREP).
D#SQLA	#SQLA	Reports the number of SQL administrative statements issued by a transaction during the sampling period. This value includes • LOCK TABLE • COMMENT • LABEL • GRANT • REVOKE • SET CURRENT SQL ID • SET CONNECTION • SET CURRENT DEGREE • CONNECT • RELEASE • SET CURRENT RULES (QXCMTON + QXLOCK + QXGRANT + QXREVOK + QXLABON + QXSETSQL + QXCON1 + QXCON2 + QXREL + QXSETCON + QXSETCDG + QXSETCRL).
D#SQLC	#SQLC	Reports the number of SQL statements per commit point (SELECT, FETCH, INSERT, DELETE, UPDATE) during the sampling period (QXSELECT + QXFETCH + QXINSRT + QXDELET + QXUPDTE).
D#DYN	#DYN	Reports the number of dynamic SQL statements (PREPARE) during the sampling period (QXPREP).
D#CALL	#CALL	Reports the number of stored procedure calls during the sampling period (QXCALL).

Table 20. SQL Monitors (Continued)

View Name	Monitor	Description
D#SPRC	#SPRC	Reports the number of stored procedures executed during the sampling period (QXCALL, QXCALLAB, QXCALLTO, QXCALLRJ).
D#REOP	#REOP	Reports the number of times that reoptimization for host variables occurred during the sampling period (QXSTREOP). (DB2 Release 5.1 and later)

CPU Usage Monitors (Area = WKLD)

The monitors listed in Table 21 measure the use of CPU time by a transaction.

Table 21. CPU Usage Monitors

View Name	Monitor	Description
D@CPU	@CPU	Reports the average CPU time used by a transaction during the sampling period (QWACSPCP + QWACEJST - QWACBJST).
D@CPUD	@CPUD	Reports the average CPU time in DB2 used by a transaction during the sampling period (QWACAJST + QWACSPPT).

Transaction Usage Monitor (Area = WKLD)

The monitor listed in Table 22 measures the amount of DB2 transactions processed.

Table 22. Transaction Workload Monitor

View Name	Monitor	Description
D#PROC	#PROC	Reports the number of processed DB2 transactions during the sampling period. A transaction is equivalent to a DB2 accounting record.

Buffer Usage Monitors (Area = WKLD)

The monitors listed in Table 23 measure the amount of buffer usage activity.

Table 23. Buffer Usage Monitors

View Name	Monitor	Description
D#GETP	#GETP	Reports the number of GETPAGE requests in the buffer pools during the sampling period (QBACGET).
D#UPDP	#UPDP	Reports the number of update page requests in the buffer pool during the sampling period (QBACSWS + QBACSWU).
D#RDIO	#RDIO	Reports the number of synchronous read I/O requests processed during the sampling period (QBACRIO).
D#PFRD	#PFRD	Reports the number of prefetch read requests processed during the sampling period.
D#WRIT	#WRIT	Reports the number of Write Immediate I/O requests processed during the sampling period (QBACIMW).
D#PFRQ	#PFRQ	Reports the number of prefetch requests processed (sequential, list, dynamic) during the sampling period (QBACSEQ + QBACLPF + QBACDPF).
D#PFIO	#PFIO	Reports the number of prefetch I/O requests processed during the sampling period (QBACRIO).
D#PFPG	#PFPG	Reports the number of prefetch I/O pages read during the sampling period (QBACSIO).
D#GETF	#GETF	Reports the number of conditional GETPAGE failures in the buffer pools during the sampling period (QBACNGT).
D#HPVS	#HPVS	Reports the number of successful synchronous reads to move a page from a hiperpool to a virtual buffer pool during the sampling period (QBACHRE).
D#HPPG	#HPPG	Reports the number of pages found in a hiperpool and moved to a virtual buffer pool because of a prefetch under control of the agent during the sampling period (QBACHPG).
D#GSRD	#GSRD	Reports the number of coupling facility read requests because of the buffer being marked invalid or the requested page not found in the buffer pool during the sampling period (QBGAXD, QBGAXR, QBGAXN, QBGAMD, QBGAMR, QBGAMN).
D#GSWR	#GSWR	Reports the number of changed pages written to the group buffer pool during the sampling period (QBGASW).
D#GSWC	#GSWC	Reports the number of clean pages written to the group buffer pool during the sampling period (QBGAWC).

Lock Usage Monitors (Area = WKLD)

The monitors listed in Table 24 measure lock activity and contention.

Table 24. Lock Usage Monitors

View Name	Monitor	Description
D#DDLK	#DDLK	Reports the number of deadlock conditions detected during the sampling period (QTXADEA).
D#TMO	#TMO	Reports the number of times the transaction timed out waiting for a lock or latch during the sampling period (QTXATIM).
D#SUSP	#SUSP	Reports the number of times the transaction was suspended for a lock or latch during the sampling period (QTXASLOC).
D#ESCL	#ESCL	Reports the number of lock escalations that occurred during the sampling period (QTXALES + QTXALEX).
D#MAXL	#MAXL	Reports the maximum number of locks held by a transaction during the sampling period (QTXANPL).
D#CLMF	#CLMF	Reports the number of claim request failures detected during the sampling period (QTXACLUN).
D#DRNF	#DRNF	Reports the number of drain request failures detected during the sampling period (QTXADRUN).
D#GSUS	#GSUS	Reports the number of suspensions because of global resource contention during the sampling period (QTGAIGLO, QTGASGLO, QTGAFLSE).
D#GFAL	#GFAL	Reports the number of suspensions caused by false contentions during the sampling period (QTGAFLSE).
D#GRTA	#GRTA	Reports the number of global lock or change requests denied because of an incompatible retained lock during the sampling period (QTGADRTA).
D#GLRQ	#GLRQ	Reports the number of lock requests for P-Locks during the sampling period (QTGALPLK).
D#GLKX	#GLKX	Reports the number of both L-Lock and P-Lock requests propagated to OS/390 XES synchronously during the sampling period (QTGALSLM).
D#GNTS	#GNTS	Reports the number of notify messages sent during the sampling period (QTGANTFY).

Elapsed Time Monitors (Area = WKLD)

The monitors listed in Table 25 measure elapsed time for a transaction, DB2 processing, I/O operations, or lock or latch waits.

Table 25. Elapsed Time Monitors

View Name	Monitor	Description
D@ELAP	@ELAP	Reports the average elapsed time for a transaction during the sampling period (QWACESC - QWACBSC).
D@ELTM	@ELTM	Reports the elapsed time for transactions that occur within DB2 targets defined as part of a MAINVIEW for DB2 workload during the sampling period. **Note:** This monitor is invoked automatically when a DB2 workload is started.
D@ELPD	@ELPD	Reports the average elapsed time in DB2 processing during the sampling period (QWACASC).
D@ELTD	@ELTD	Reports the elapsed time for DB2 transactions that occur within targets defined as part of a MAINVIEW for DB2 workload during the sampling period. **Note:** This monitor is invoked automatically when a DB2 workload is started.
D@ELP3	@ELP3	Reports the average elapsed time spent waiting for all accounting class 3 reasons during the sampling period (QWACCAST, QWACAWTG, QWACAWTJ, QWACAWTI, QWACAWTL, QWACAWDR, QWACAWCL, QWACAWTP) (QWACAWTR).
D@ELIO	@ELIO	Reports the average elapsed time doing I/O operations during the sampling period (QWACAWTI).
D@ELLK	@ELLK	Reports the average elapsed time the transaction spent waiting for locks or latches in DB2 during the sampling period (QWACAWTL + QWACAWDR + QWACAWCL + QWACAWTP).
D@ELPR	@ELPR	Reports the average elapsed time spent processing prefetch reads during the sampling period (QWACAWTR).
D@ELDR	@ELDR	Reports the average elapsed time the transaction spent waiting for drain during the sampling period (QWACAWDR).
D@ELCL	@ELCL	Reports the average elapsed time the transaction spent waiting for claim during the sampling period (QWACAWCL).
D@ELPL	@ELPL	Reports the average elapsed time the transaction spent waiting for page latch during the sampling period (QWACAWTP).
D@ELSP	@ELSP	Reports the average elapsed time spent waiting for an available TCB before the stored procedure could be scheduled during the sampling period (QWACCAST).

Table 25. Elapsed Time Monitors (Continued)

View Name	Monitor	Description
D@ELGM	@ELGM	Reports the average elapsed wait time caused by suspension for sending messages to other members in the data sharing group during the sampling period (QWACAWTG).
D@ELGL	@ELGL	Reports the average elapsed wait time caused by suspension of an IRLM lock request due to global lock contention that requires intersystem communication to resolve the lock during the sampling period (QWACAWTJ).

I/O Parallelism Monitors (Area = WKLD)

The monitors listed in Table 26 measure the amount of parallel I/O for a transaction.

Table 26. I/O Parallelism Monitors

View Name	Monitor	Description
D#PRLG	#PRLG	Reports the total number of parallel groups executed during the sampling period (QXTOTGRP).
D#PRLR	#PRLR	Reports the number of parallel groups executed to a degree less than planned due to storage shortage or buffer pool contention during the sampling period (QXREDGRP).
D#PRLF	#PRLF	Reports the number of parallel groups that fell back to sequential operation during the sampling period due to • Ambiguous cursor • Lack of ESA SORT support • Storage shortage or buffer pool contention • Unavailable OS/390/ESA enclave services • Query Parallelism disabled by the RLF (QXDEGCUR + QXDEGESA + QXDEGBUF + QXDEGENC + QXRLFDPA).
D#PRLS	#PRLS	Reports the number of sysplex query failures during the sampling period (QXCOORNO + QXISORR + QXCSKIP). (DB2 Release 5.1 and later)

Appendix A. Lock Type Table

Table 27 defines the possible lock types and resources for the lock-related detail trace events:

- Detail logical lock - IFCID 21
- Lock Suspension - IFCID 44/45
- Deadlock - IFCID 172
- Timeout - IFCID 196
- Detail physical locks (P-Locks) - IFCIDs 251, 259

Table 27. Lock Types

Lock Type (short)	Lock Type (long)	Resource Name	Resource Number (hexadecimal)
ALTER BP	ALTER BUFFERPOOL	BP = bpid	
BINDLOCK	AUTOBIND/REMOTE BIND	BINDLOCK	
CATM CAT	CATMAINT CONVERT CATALOG	DB = database OB = pageset	
CATM DIR	CATMAINT CONVERT DIRECTORY	DB = database OB = pageset	
CATM MIG	CATMAINT MIGRATION	DB = database OB = pageset	
CDB PLOK	CDB P-LOCK (DDF)	DB = database	
COLLECTN	COLLECTION	Collection ID	
CS-DRAIN	CURSOR STABILITY DRAIN	DB = database OB = pageset	Part# / 0
DATABASE	DATABASE	DB = database	
DATAPAGE	DATA PAGE	DB = database OB = pageset	Page#
DBALLOC	DBALLOC - START/STOP	DB = database OB = pageset	Part# / 0
DBCMDSER	DB CMD SERIAL	DB = database	
DBD PLOK	DBD P-LOCK	DB = database	
GBP CAST	GROUP BP CASTOUT P-LOCK	BP = bpid	
GP EX UP	GROUP DB EXCEPTION UPDATE	DX = GDBET	
GROUP BP	GROUP BP START/STOP	BP = bpid	
HASH-ANC	HASH ANCHOR	DB = database OB = pageset	Page# Anchor

Table 27. Lock Types (Continued)

Lock Type (short)	Lock Type (long)	Resource Name	Resource Number (hexadecimal)
INDEXPAG	INDEX PAGE (# = x'000002FF', index root page)	DB = database OB = pageset	Page# Subpage#
IX EOF	INDEX END-OF-FILE	DB = database OB = pageset	Part# / 0
IXTREEPL	INDEX MANAGER TREE P-LOCK	BP = bpid DB = database OB = pageset	
LPL/GREC	LPL/GRECP DB EXCEPTION	DB = database OB = pageset	Part# / 0
MASSDEL	MASS DELETE	DB = database OB = pageset	
OPEN	OPEN PAGESET / DATASET	DB = database OB = pageset	
PAGE PLK	PAGE P-LOCK	BP = bpid DB = database OB = pageset	Part# / 0 Page#
PAGESET	PAGE SET	DB = database OB = pageset	
PART-DS	PARTITIONED DATASET	DB = database OB = pageset	Part#
PARTLOCK	PARTITION LOCKING	DB = database OB = pageset	Part#
P/P CAST	PAGESET/PARTITION CASTOUT PLOK	BP = bpid DB = database OB = pageset	Part# / 0
P/P PLOK	PAGESET/PARTITION P-LOCK	BP = bpid DB = database OB = pageset	Part# / 0
REPR DBD	REPAIR DBD TEST/DIAGNOSE	DB = database OB = pageset	
RLF PLOK	RLF P-LOCK	DB = database OB = pageset	
ROW	ROW	DB = database OB = pageset	Page# RID
RR-DRAIN	REPEATABLE READ DRAIN	DB = database OB = pageset	Part# / 0
SCA ACC	SCA ACCESS - RESTART/REDO	SC = BMC-RSTP	
SERVICE	SERVICEABILITY	(not identified)	

Table 27. Lock Types (Continued)

Lock Type (short)	Lock Type (long)	Resource Name	Resource Number (hexadecimal)
SKCT	SKELETON CURSOR TABLE	PL = planname	
SKPT	SKELETON PACKAGE TABLE	PK = collection, package, token	
SYSLGRNG	SYSLGRNG RECORDING	DB = database OB = pageset	
TABLE	TABLE	DB = database OB = pageset	
UTIL EXC	UTILITY EXCLUSIVE EXECUTION	UTEXEC	
UTILSER	UTILITY SERIALIZATION	UTSERIAL	
UTILUID	UTILITY UID	UI = utility ID	
WR-DRAIN	WRITE DRAIN	DB = database OB = pageset	Part# / 0

- Page# is 0 for unlocks.
- P-Locks do not cause timeouts or deadlocks, so they do not appear for these events.

Appendix B. View Conventions

This appendix describes the MAINVIEW conventions that are used to display numeric and graphic data in views. These conventions are adhered to by all BMC Software MAINVIEW products.

Numeric Values

If a number fits within the column width of a field, it is displayed in its entirety. When a number exceeds the column width of a field, MAINVIEW attempts to fit the number by several methods. The following list shows the methods in the order in which they are employed to fit a number within a field's column width:

1. Insignificant low-order decimal values are rounded.
2. Low-order digits are truncated. Decimal numbers are converted to integers if necessary.
3. Numbers are expressed in powers of 1000 using the following notation:

   Ki Kilo (1000)

   Mi Mega (1,000,000)

   G Giga (1,000,000,000)

   T Terra (1,000,000,000,000)

If a number is still too large to be displayed within the field width, asterisks (*) appear in the field.

Graph Values

A value within the lower and upper boundaries of a graph is displayed as a horizontal bar. Depending upon the display terminal, the magnitude of the graphed value might be depicted as a high-resolution horizontal bar or simply keyboard characters in the case of low-resolution terminals.

A value exceeding an upper graph boundary has a plus sign (+) to indicate the horizontal bar has been truncated at the upper boundary limit. The example below shows a value exceeding the 100% upper boundary limit of a graph displayed on a low-resolution terminal.

```
 W1 =DSOVER============DB2G=====*========17SEP2002==15:02:38====MVDB2========83
CMD Serv  Parm           Avg % Warning  Avg      Avg      Area Count
--- ----- --------       0.....50...100 Value--  Warning- ---- -----
    ECSAP          108.6 *************+    76.00    70.00 DMVS     1
```

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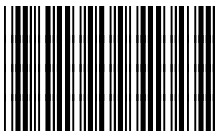
ARBITRATION. ANY DISPUTE BETWEEN YOU AND BMC ARISING OUT OF THIS AGREEMENT OR THE BREACH OR ALLEGED BREACH, SHALL BE DETERMINED BY BINDING ARBITRATION CONDUCTED IN ENGLISH. IF THE DISPUTE IS INITIATED IN THE AMERICAS REGION, THE ARBITRATION SHALL BE HELD IN NEW YORK, U.S.A., UNDER THE CURRENT COMMERCIAL OR INTERNATIONAL, AS APPLICABLE, RULES OF THE AMERICAN ARBITRATION ASSOCIATION. IF THE DISPUTE IS INITIATED IN A COUNTRY IN THE ASIA PACIFIC REGION, THE ARBITRATION SHALL BE HELD IN SINGAPORE, SINGAPORE UNDER THE CURRENT UNCITRAL ARBITRATION RULES. IF THE DISPUTE IS INITIATED IN A COUNTRY OUTSIDE OF THE AMERICAS REGION OR ASIA PACIFIC REGION, THE ARBITRATION SHALL BE HELD IN AMSTERDAM, NETHERLANDS UNDER THE CURRENT UNCITRAL ARBITRATION RULES. THE COSTS OF THE ARBITRATION SHALL BE BORNE EQUALLY PENDING THE ARBITRATOR'S AWARD. THE AWARD RENDERED SHALL BE FINAL AND BINDING UPON THE PARTIES AND SHALL NOT BE SUBJECT TO APPEAL TO ANY COURT, AND MAY BE ENFORCED IN ANY COURT OF COMPETENT JURISDICTION. NOTHING IN THIS AGREEMENT SHALL BE DEEMED AS PREVENTING EITHER PARTY FROM SEEKING INJUNCTIVE RELIEF FROM ANY COURT HAVING JURISDICTION OVER THE PARTIES AND THE SUBJECT MATTER OF THE DISPUTE AS NECESSARY TO PROTECT EITHER PARTY'S CONFIDENTIAL INFORMATION, OWNERSHIP, OR ANY OTHER

PROPRIETARY RIGHTS. ALL ARBITRATION PROCEEDINGS SHALL BE CONDUCTED IN CONFIDENCE, AND THE PARTY PREVAILING IN ARBITRATION SHALL BE ENTITLED TO RECOVER ITS REASONABLE ATTORNEYS' FEES AND NECESSARY COSTS INCURRED RELATED THERETO FROM THE OTHER PARTY.

U.S. GOVERNMENT RESTRICTED RIGHTS. The Software under this Agreement is "commercial computer software" as that term is described in 48 C.F.R. 252.227-7014(a)(1). If acquired by or on behalf of a civilian agency, the U.S. Government acquires this commercial computer software and/or commercial computer software documentation subject to the terms of this Agreement as specified in 48 C.F.R. 12.212 (Computer Software) and 12.211 (Technical Data) of the Federal Acquisition Regulations ("**FAR**") and its successors. If acquired by or on behalf of any agency within the Department of Defense ("**DOD**"), the U.S. Government acquires this commercial computer software and/or commercial computer software documentation subject to the terms of this Agreement as specified in 48 C.F.R. 227.7202 of the DOD FAR Supplement and its successors.

MISCELLANEOUS TERMS. You agree to pay BMC all amounts owed no later than 30 days from the date of the applicable invoice, unless otherwise provided on the order for the License to the Products. You will pay, or reimburse BMC, for taxes of any kind, including sales, use, duty, tariffs, customs, withholding, property, value-added (VAT), and other similar federal, state or local taxes (other than taxes based on BMC's net income) imposed in connection with the Product and/or the Support. This Agreement constitutes the entire agreement between You and BMC and supersedes any prior or contemporaneous negotiations or agreements, whether oral, written or displayed electronically, concerning the Product and related subject matter. No modification or waiver of any provision hereof will be effective unless made in a writing signed by both BMC and You. You may not assign or transfer this Agreement or a License to a third party without BMC's prior written consent. Should any provision of this Agreement be invalid or unenforceable, the remainder of the provisions will remain in effect. The parties have agreed that this Agreement and the documents related thereto be drawn up in the English language. Les parties exigent que la présente convention ainsi que les documents qui s'y rattachent soient rédigés en anglais.

Notes



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